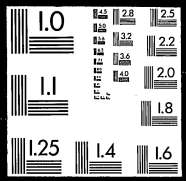

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Thomas A Edison Papers

A SELECTIVE MICROFILM EDITION
PART V
(1911–1919)

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START

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A Note on the Sources

The pages which have been filmed are the best copies available. Every technical effort possible has been made to ensure legibility.

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NOTEBOOK SERIES
POCKET NOTEBOOKS

Notebook Series -- Pocket Notebooks
Notebook, PN-17-08-29

The dated entries in this pocket notebook cover the period August-September 1917. The book was used by Edison for notes pertaining primarily to war-related experiments. Included are experiments on sound detection devices and other means of locating submarines. There are also references to a "kite rudder" that would enable Allied ships to turn more quickly in case of an emergency; Lyle gun projectiles; smokescreens that might enable ships to conceal themselves from enemy submarines; and other camouflaging devices. Much of the research was conducted aboard the yacht *Rampant* and the Navy warship USS *Sachem* in Long Island Sound. Also included is a notation regarding a meeting in Washington, D.C., with President Woodrow Wilson on August 20, 1917. Some entries appear to be transcriptions of entries from PN-17-04-27. Among the employees who assisted Edison were Isidor (Jerry) Chesler, John A. Hanley, Absalom M. Kennedy, Benjamin Liebowitz, Sherwood T. (Sam) Moore, and Frederick P. Ott. There are also several references to artist Orlando Rouland, who participated in some of the experiments. The pages are unnumbered. Approximately 160 pages have been used.

[1]

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1280
1200
800

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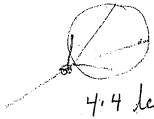
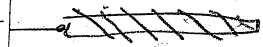
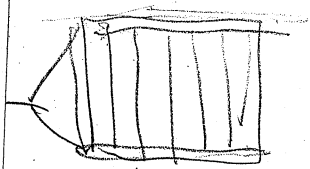
240
24

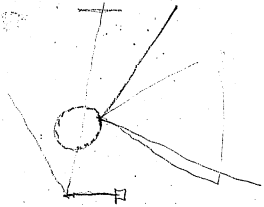


4.4 lengths mice

2.2





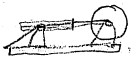


#2996

Make 7 ft wire cabinet steel cabinet * also
lookout for hand bombs thrown in Road

Mobile Mud shoes -

Wheel 200 lbs Explosive, fire
when ready or clear from machine



Condition: detector - microfone hear
tunnelling -

Moore

Amplifying lever for cracks
phone

Cargo boats 11 Knots. Submarine
only 11 to 12 underwater cant catch
them, so statement about dead
reckoning is false = its difficult
for sub to get in position for a
Cargo boat with guns.
Think we should listen with
28 ft funnel for subs running
on top -

Dims says difficult see Sub on
account dark background of water
= Remedy is silhouette Vision
Says German Torpedoes range
1000 to 2000 yards — Speed
sub 10 Knots below 15 above
bubbles show 150 ft behind
Torpedo
Says German have a
transparent observation balloon
at sea can see 50 miles —
Says periscopes vibrates bad
so only see Warship 6 miles
Industrial, are objects, so sub chasers
(5)

are seldom seen at much distance when sea rolls –

German subs only charge in day as noise too much at night & dischargers get them,

Notes, bending of periscope also Effect of water on Conning Tower must vibrate deck + give a note also the gyroscope + possibly Commutators, If pumps Thump we must get high vibration rate as a noise –

Try Silhouette with telescope through Port holes.

Make some dummy periscope 4' long + paint white for test on Sachem –

Shoot annoying oils projectile to smudge periscopes as well as smoke shells – When the go down + then come up can't see anything till boat is all up + may catch them –
Sharpnel may break periscope glass – This will stop or delay them from shooting a 2nd Torpedo when 1st one fails by quick turning

If can hear commutators of German sub at 10 knots running submerged well be 400 to 800 second on each shaft,
Look out for pump knocks –

Automatic Controlled Machine gun at distance by Elec + discharging device if hable to be employed

12" piece glass smoked, part 2 together
1/1000" apart. use eye piece or amplifying
lense + test for periscope in authomatic)

Multiple telegraph system
10 forks, self vibrated in front of
phones, phones in Multiple or
series keys short ckt, such
10 phones at receiving end working
Tuned air Column with listening
tubes, Morse Code

For good funnel paper
should .050 per inch of length

Why does our funnel vibrate
to Certain notes strongly when
held in hand ~~and~~ not to others
Yet the funnel is not in tune
with anything on record
Strange, mockingbird,
Use Piano

Want signal from Earth 1st line
trenches 1 mile minimum.

French hear sub 5 Kilometers when
sea quiet & boat stopped —
Only 500 meters when sea rough
& nothing when boat running.
English the same

If Can destroy barbed wire, men
only need fear bullets + hand
grenades — wire entanglements
50 to 100 meters deep
2½ meters apart.

Curvature of the Earth

3000 ft	.21
6000	.85
9000	1.91
12000	3.40
15000	5.32
18000	7.66
21000	10.42
24000	13.62
27000	17.24
30000	21.27

3" gun 10 Tons per sqr inch
4" " 12 " " " pressure

$20 to Rouland for expenses

Capt Charles of Cunard Valeria
said periscope cannot be seen
much more than 1000 yards
Sub can come to surface 3 or 4
miles ahead of ship & then
completely submerge & by
dead reckoning know just when
& where to launch torpedo
without showing her periscope
providing ship doesn't change
her course —

Sachem SP 192
Orlando Rouland
Tarrytown NY

T Ashley Sparks Asst. Cunard
here 24 State St NY

Roxbury wants to make smoke
shell for 1½" gun —

Cargo boat req rudder turns
90° in 1½ min 1070 radius
present rudder 150 sq ft
can stop engine & reverse in
1 min — to bring to stop
3 min 1500 ft 180° turns
3 min —

Have bell on ship to test
Receiver when running —

Ensign Geo L Catlin
(Lockwoods scoop) Room 3735
120 Broadway Telephone 6020 Rector
Wants to aid — Smart
Naval Reserve Mar
(113)

Rec of Moore microfone
82 ohms

At Bliss proving ground
4 large Audion reg bellow
transmitter
400 yards hear torpedo instantly
to launched
1000 yards in 1 sec
2000 " in less than 10 sec

See President 4 p.m. Monday

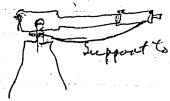
Ask Daniels for 3" gun
Navy or Army worth —

About Baker

Ask Daniels for order to
get 1000 ft Lead Covered
Armored Cable made by
Safety Insulated Wire Co NY
Mfg for Navy now.

Make 2 more short funnels
like Kennedy has —

Fix subm projectile so the
3 vanes for rotation will come
off easily when it strikes
water — doing away with
the skin friction —

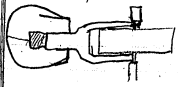


concrete

2" plank

sections - channel — possibly all scantling concrete

Rotating wheel feed time bombs in cells, groomed & rewound by power after launches —



500 lbs Picric in wheel 250 ft/sec
Short Cast iron Matlar, when up to speed Explode shear pins.
French work = probably pay out wire — or Explode by flying wires

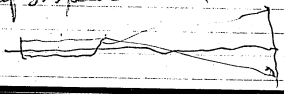
wheel with wire
High velocity - Cut fastening & let wire run out
Tangle up advancing mine

Stream of cumulation reaching 100 or more ft charged high voltage for advancing mine —

Get up a dragging in lead for a couple miles behind mine or obstacle.
Blast it possible. with very close proximity Sunk in = hoz

Collapsible trench wheel all found 3 lbs —

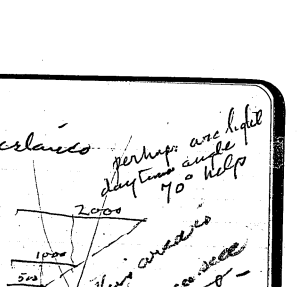
Have Kite rudders given Cunards & glasses & give them angle ahead to look for wake of Torpedo



Periscope Smudge shells -

If wheel will work on water, it could have Contacts which only work on metal on striking Sub it would explode -
Perhaps on water it would want bags to keep from sinking -
Use 2 wheels 20 ft apart with rope to droop periscope -

If a torpedo up to hit & its fired 600 1000 or 2000 ft there is a certain angle from ship that will show wake at any distance



Phones with more than 1 point are not liable to work as one point interferes with the other to increase Volume use 2 phones & funnel & Connect to Receiver in Neutral.

get boat equal to freighter
same displ. tender
etc. make tests, Lieb—
off Jersey Coast,
see what Coasters
Run to Malin Hd
also to Southern
Ports that can
test submarine &
get in touch—get
information Coal
Where my Edison

Try spray to give a mist but
very light to hide Centers &
highest part of boat

Try glass showing two obs
lines periscop

Try photo of skyline with
stake or fake periscope see
if it brings it out plain
or better than eye—

When come to Newfoundland
for Submarine Experts have
Chief Officer Explain by
diagram just how he
would work sub to
fire torpedo to get speed
of ship etc & what he
would do under
Various Conditions

Tell Libby after trying England
25 Lamps. Laugh talkin
instead of Horse

Try same thing with arc & shutter for day signals

Also Red light or otherwise signal by Lithon Lite —

Kennedy — 80 seconds before hear torpedo at 4000 yards —
Cant see wake very far coming toward you but after passes can see of 5 @ 6000 yards —
See mist better after passed, probably see 500 yards before passed

All these results in Calm weather —

2 screws, used both supposed to go same speed —

Kennedy, 2 exp cant tune for the whole, —

4 blades, 1300 per min
21 per sec yet lowest note he hears in 200
& its much higher —
if each blade gives off 17½ second
They use Turbine ~~10000~~ 18000,
Rev — ~~this make give 197,~~
~~but there is a pension,~~
~~Fun out teeth~~

fire Torpedo out with 80 lbs air —

(2)

gyroscope 13000

air cylinder

7/16 thick —

Where gears —

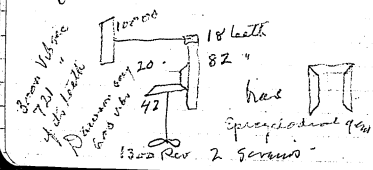
~~3/32~~ — 5/64

has 400 lbs air

pressure — 800 °Fahr

air is heated —

This is the Sphaeroll



Blue torpedo 28 miles hour

2445 ft min 40.66 ft second

gun

830 cm

saw white wake every

Roulcaud with ~~flow~~

Eg saw wake 200 ft approx

after End of Event.

Sky line hazzy

Water glassy except

fine ripples —

no wind —

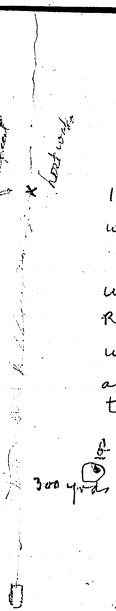
Edison saw the mist above

wake much clearer than wake

but only against hazy sky

line, when against dark

land didnt see it



The wake is
varegated as it thins
100 ft making their
wake does this
right along after
wake is died down in
Rear still see mist
in daubs and all
along. about 250
to 300 ft in rear

The Mist comes in gusts
in spots like blanket & steady

[illegible] Mist

wake

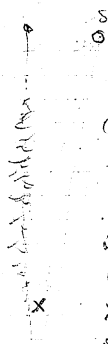
Wake lost at mile

Sea couldnt be more
favorable for observing
wake

The Mist is seen against
the wake, think
we are 400 yards

No 2 Torpedo

Saw wake 200 to 300 ft from boat



Mist very strong when light strikes it thus Cant see at X on account of light strong & haze

Most torpedo went up 10 ft or more

Most always in sight 100 to 150 ft behind wake.

See wake to Kennedy's boat 3000 or 4000 yds from K. then wake gets into haze

Try Experiment of some Sublimin mixt in water that floats like oil that our from torpedo will blow bubbles

Could shoot it out

Try day time arc light
beam on mist.

3rd Shot -
Sub Boat go out -
Torpedo passed under
boat 3 seconds
after torpedo passed
bubbles came up
This at 40 ft sea
is ~~[illegible]~~ 120 feet,

Did not notice so much
mist this time
where land is cutting
off sky line haze could

see it easily 1 to 2 ft
above wake then could
have been seen 20 yd if
wake were invisible
Wake is very visible -
Can see it before
bubbles appear or break
~~[illegible]~~
Especially on torpedoes
upward bounce
Think arc light
beam would
make it easier visible
both wake & mist

Boat in wake deep
bubbles are 8 @ 12
inch snakes dia
before breaking
The mist is a snake
not a water mist,
Can smell it,
like smell of gas
engine —
Wake at first 1 ft
widens out to 10 ft
behind

Last torpedo fired saw it
go in water but never
saw it afterwards sun
wrong — Wake ~~[illegible]~~ saw
it quite, water not glassy
where torpedo went,
about 3 pm — only fired
6 torpedoes today none
was accepted they kill me —
My impression is that
in glassy sea Convoy boat
can see wake & especially
at sun in night 1500 yards
but may make it seen
will see nothing until
its right near ship —
+ no dependence can be
placed on it —

Kennedy Chester head
SB 192 Boiler pump
at 2500 yards —

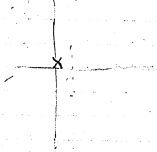
C91

Chester in bathing suit
dived 5 ft under water &
heard torpedo 1000
yards away with ear
only — says heard only
one thin note, above
500 vibs sec.

Have small launch
draw oil bag over
course of torpedo
see if one better
find an oil etc
which will flow
bubbles, or cause
big air bubbles to
carry up in air
Weed etc to reflect
light —

Try cylinder oil
& crude oil from
Pliso — also
try bag from 192
Brow to see if keeps
bow wave from
breaking

for oil spreader use
Feds wheel with sal a
hole in it,



When a gets to
X or nearly there
shoot another

good, south sal ahead
streak two ft wide
200 miles each side
boat,

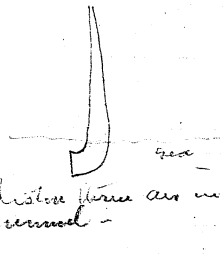
Most practical device for seeing
periscope on the sky line 2 ft
from the water is cut a hole
Mud ships put in a glass on
each side boat with a canal
from rail – using a good
telescope + get rid of the
d–d periscope –
see how close to water is
a glass holes in 192

+ If one could be cut
easily in Rampart –
have 1" - 6" from sea 12" 18" 24"
amidship -

When we run old Whitehead
get speed 36 miles hour
if it will stand it –
ask how many times it
will stand it at 36 +
at normal

Fred Ott fit an ear piece to my Horn & let Chevalier go under water & hear with Ear direct - get air out under water before puts in Ear, listen after torpedo passed 1 mm 2 mm & so on

Add a bend to a horn



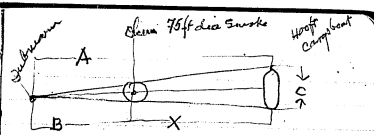
Listen three ears in general -

Naiv Draughtsman lay out width & make to cover ~~Vision~~ Vision line at 1 2 3 & 4 miles on 400 ft boat & on submarine -

Bore 1" hole 2 ft above water line Each side 1 qr tap & put screw in with Rubber washer to be used as a sight line for the Eye - no glass -

Warn Merchant ships about boiler pumps find out how to soften them or use mysticor

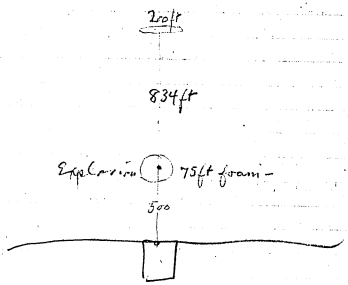
Req a double pole with Rope holder to raise up quick for Flash off the Cargo ship when sight Submarine -
This will give advantage to Cargo boat for hitting = perhaps the fire holder would do - on a ~~[illegible]~~ Captive Ballon 15X20 have it figured



Dia - 75ft Oleum Cloud -

A	B	X
1000 yrds	187 yards	813 yards
2000 "	375 "	1625 "
3000 "	562 "	2438 "
4000 "	750 "	3250 "
5000 "	937 "	4063 "
6000 "	1125 "	4875 "

Distance to Sub M	Distance to fire bomb
1000 yrds	813 yards
2000 "	1625 "
3000 "	2438 "
4000 "	3250 "
5000 "	4063 "
6000 "	4875 "



Launch $23\frac{1}{2}$ ft -
without rudder turned
90 deg in 18 ft with kite
with kite & rudder 11 ft.
With plain rudder only 46 ft.

Objects seen at sea
above eye of observer

	Nautical miles
5 ft	2.5
10	3.6
15	4.4
20	5.1
25	5.7
30	6.2
35	6.7
40	7.2
45	7.7
50	8.1
55	8.5
60	8.8
65	9.2
70	9.6
75	9.9
80	10.2

Nautical 6080 ft

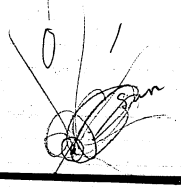
10 20 am

Weather Warm ft
bright - Heavily
avg cumulus clouds
Wind 10 @ 15
makes hum

Can see
Smoke for
2500 to
2500 yards
Wake 1500
Yards

Boat
0.5 mm

used big
trip opened
down telescope
Can see smoke
as well with
eye - see wake
slightly better
with telescope
Very little
advantage



Yokohama torpedo leaves
an oil streak. very
smooth Even 20 min after
torpedo opens it was far
as Eye can reach -
the streak is parallel
with the wind

3rd torpedo 10-45 am
see wake 2 min 30 sec 1500 yds
see smoke ahead 4 min
4000 yds - Very hazy on
Skyline is reason cant
reach far - am in pilot
house,

#3

Torpedo started 10 35½
oil streak shows in spots
at 10.50 am - & keeps about
same - at 11.23 its plain
but bent beyond
Hazy sky line, cant see
blue sky beyond a great
height like very high
mountains in the distance

Made a little boat four foot
wide 18" long, with wooden
post mast about 1 ft high
10 @ 12" wide of cheese
cloth set it afloat
it sailed OK - think
smoke pot will be
OK with sails —
think sail should be
low & wide so
demand tendency to
tip

#4 Torpedo gives lots
smoke, with opera glass
could see head - 600 ft
long for 6½ min 6500 yds
Very Conspicuous
due to smoke given
off - No one could
miss it for 3 or 4 min
within 500 ft of
firing boat, Hazy
sky line very little
wind scarcely a ripple
Cap - oil wake very plain
(+ straight)
think flares should
stop smoke - impossible
observed in pilot House

It is evident that things in a torpedo vary much. Some gives lots smoke + oil wake + others very little smoke + oil wake. #3 was poor smoke + oil wake whereas 1120 torpedo had big smoke + oil trail —

5th torpedo fire 1147. saw head of wake big jumps of smoke. for 3 min ~~[illegible]~~ 17 seconds or 3283 yards the ~~[illegible]~~ could feel to see it could not see wake very faint, but smoke is very faint — used opera glass + in pilot house

Hugy

5th Shot

oil wake not so good smoke not so strong #4 — best good

Think we see only smoke of bubbles come in bottom due to torpedo jumping & the probably 300 @ 500 ft behind torpedo

wind

wind 5 @ 8 miles

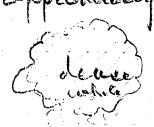
Boat

Note humidity makes it easy to see it —

Smoke Bomb -
Exploded 1 oclock 14 min
15 sec

Looked at it at 1 oclock
16 min 10 sec

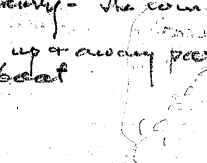
Very beautiful Cumulous
Cloud very white
apparently 75 ft clear



Trailing thin

looking weather hamboy
40 feet higher than sea
but thin smoke trailing down
to sea - As it receeded
from boat got higher

apparently - The wind
blew it up & away peacefully
with boat



was 2000 ft away at
1 oclock 18 minutes
& 200 ft up & thinning
but still a great
white across land up another
bay. Commenced settle
down 3 to 4000 ft away
at 1 oclock 19 min
20 sec went clear over
land and over

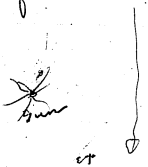
Water started settling down at 1 o'clock
20 min 3 sec

Pilot house floor is 13½ft above the water line with myself 5'9"½
19ft —

6th fired 2 o'clock 7 min
10 sec

2166 yds No smoke scarcely any wake but very conspicuous
Oil trail in place —
Ditto 2500 yds
" 3000 "
" 3300 "
Not easy to see Head at 3833 yards
Need 10 inches for robots

Caps about same angle of boat



Used Opera glasses

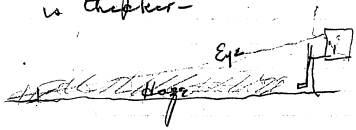
Rear Anchor ropes of Emdaw
Cannot see Beam against the Sea from our boat.
500 yards away boat
Very plain against
Oily line by Eye on deck

[51]

but not in pilot house
where ropes seen against
sea,

Can see part of Hull of
Rampart thru periscope
no mast, in pilot house
Can see all the hull &
mast family with Eye
a clear in Opera glass

Periscope is poor 1st
on account of ~~glass~~ Mirror
2nd dirty Mirror &
3rd Haze over water
is thicker -



for 1000 or 1500 yards
when haze not Very
bad periscope will
probably be Good -
but Man at Hole,
2 or 3 ft from water
line probably better
think holes 3 ft above
water best for Cargo
boats —

2nd Bomb:
Exploded at Water Edge
in a pail, Capt put 3
Cans oil & some water
this Killed it, some water
1/10 of first bomb but
hurtled water -
~~[illegible]~~

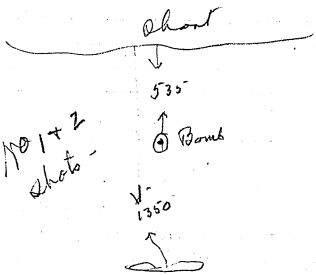
hugging close to water
went over land which is
low sand 5 ft above
water at shore —
1/2 of the smoke hugged
low land 1/2 several ft
above — got thru in
40 seconds about
Very poor that as SO_2
went into air + water —

Every cargo ship
should have 15 or
20 common
Opera glasses

Periscope 4' up being towed
by 1929 launch to the Rampant
4 pm 15 mile or more wind
Crest to depression about
1 ft, some waves 2 ft.
waves ripples Every way
Sun shines + reflects back
bothering but can see
in Hole 3000 yrds
but the periscope then
rapidly gets too low
450 pm — same angle
as torpedoes —
Hole is much better
+ is the thing to use
about 30 inches above
louder here OK
say midships + bow at bend (ss)

using Opera glasses

Opera glasses should have a focus index - so many can move between 2 points fixed or various points in middle. Think 1000 yds to 3,000 is limit.



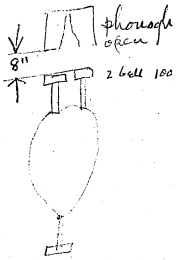
No 1 + 2 shots -

at 4000 yards lowest speed observed of new from forming boat to 4000 boat is 27 knots & a fraction 29 @ 30 but 29 is average

Doubt have many at 29 - or many at 30

Contract calls for 27 knots over 12500 yards - variation of 2 knots allowance

Can't vary more than 2 knots between 4000, + + 12500

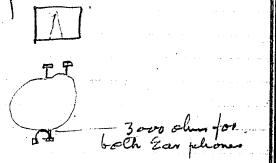


	Current	Energy
1 Bell.	1	1
2	1.33	1.77
3	1.50	2.25
4	1.60	2.56
5	1.67	2.77
6	1.71	2.94

If with 6 Bells the receiver was instead of 100 ohms was made 600 ohms & properly wound & devised would get 6 times the Energy – This is true of Multiple arc or also of Microphones are used –

It is preferable to use Microphones in Multiple arc as if one gets out it will do no harm if battery has exceedingly low resistance.

Counting record



2 Bell receivers in front Cabin in front phonograph equidistant – Listening phones in Stern Cabin – duration boxed –

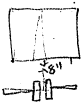
	Single	2 in Series 1 way	2 Series Reversed
Lobenstein	34	28	30
Hanley	38	28	34
Chesley	28	24	26
Gitt	28	24	22
Moore	32	30	28
average	32	26.5	28

Tested the phone that has been previously short circuited used it only

Loebowitz 26
Henley 32
Chesler 30 — got a radio on board asked men stop rocking the
Ott 26
Moore 30

28.8 average

We now placed phones thus to be sure that the waves balanced simultaneously

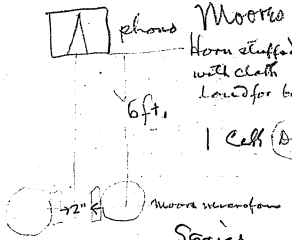


Then

	Single	Double	Difference
Henley	38	60	22
Ott	28	36	8
Loebowitz	32	58	26
Moore	34	58	24
Chesler	30	48	18
	32.4	52.	

Loebowitz got lost on one & then had the other cut in it was some planes, but disappointing Chesler confirms this —

Loebowitz put shunt a little less than limit with 2 phones in. When 1 phone put in he lost it, showing gain planes —



Moore Micro

Horn stuffed - with cloth too Loud for horn

1 Cell (Dry)

Series –

	Single	Double	Difference
Ott	22	20	2
Moore	34	32	2
Lozbowitz	26	24	2
Chessler	32	26	6
	28.5	25.5	

Multiple Arc

	Multiple
Ott	22
Moore	32
Lozbowitz	28
Chessler	30
	28

Seems no gain Either way

Another Test

	No 1 Single	No 2 Single
Ott	18	26
Moore	34	32
Lozbowitz	24	28
Chessler	30	32
	26.5	29.5

28 – average

Ear Sensitiveness	Miles of Cable
Hanley	38.33
Chessler	30.50
Ott	22.70
Moore	34.10
Lobwitz	31.63

[ITEM(S) FOUND IN BOOK]

0 10 20 30 40 50 60 70 80 90 100

No 2 Moore micro which averaged single # 2 29.5 Miles Cable on box. Is now loaded with a one stage audion with an inactive B audion Lamp —

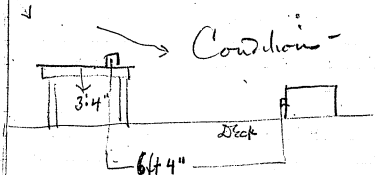
	audion
Chessler	60
Lockwood	56
Moore	60
	58.7

Had Reg ⌓ W Elec for input
⌓ Sonnet W Elec for output
2 1500 ohm head receivers +
the 2 measuring boxes —

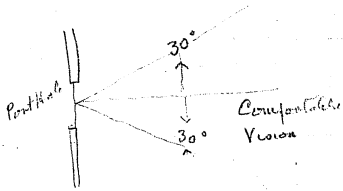
We now put in same size coil as 105 have on input ⌓
Much louder at 60,
Very much.

We now put Phonograph in the Closed box with small hole in box —

	with audion	Without audion
Chessler	36	Nothing
Lockwood	32	
Moore.	40.	



funnel stuffed with cloth,



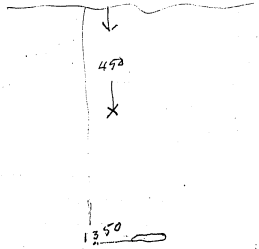
Port Hole in 1925P 10½" closed + 12" open.

Maximum angle of Vision is 40° to 50° on each side but uncomfortable.

Quite some light is lost thru the glass pellicule well cleaned

Ports should be larger say 12 @ 14 closed if this is practicable

No 3 bomb-



Wind Miles/hour	feet/min	feet/sec
10	880	14.6
15	1320	22
20	1760	29.3
25	2200	36.6
30	2640	43.8

Aug 29th 3 pm 1917

4th Bomb Wind 22 miles hour (land)
Waves 2 @ 3 ft pond out
Exploded
258 pm –
Immediately 86 ft wide 20 ft high
lengthens rapidly in direction
of the wind. 2.59 pm lengthened
out 800 to 1000 ft long –
hugs the water line & puts off
sky line, at 3 pm same length
thins out above water line but
Cant see land. Now it Except 10 @
15 ft above where the thinning
out, land looks very Hazy
3 o'clock 30 seconds 1500 ft
long & too thin but very
hazy near water line – 1000 ft
long 3 o'clock 1 min 30 sec
passed over land now on
haze & thin

Cam Vertical, bottom on level
of water 1000 cc 60% glass
½ lb 20% Dynamite

White Caps = Waves 2½ ft
maximum top to bottom –

Torpedo runs 50 ft second
1000 yards per minute

1st Try 5 ft under water
then maximum depth.

2: Moore closes off pressure
regulator, put up 10 ft
tubes no diaphram free

3 = Put 1+2 Moore ~~series~~
Multiplex arc on cradle
use two 90 ohm' resistance
10 ft or regular depth

4 put 2 magnets facing
each other & connected
together series, leads 2 gas
& 3 [illegible]

5 = Req above in water
water both sides dia
but magnets thoroughly
insulated -- 1/32 hole
let water in inside
part of dolphin -

1st Smoke bomb today
Effective for 4 minutes &
then would cover
a ship at 2 miles
wind about 15
miles hour

bomb
↕ boat

Can see smoke 10 mins
after wind was off -

We now will fire

- - - - - - - - - -

↕ boat.

so as to observe if
Sidewise after 2 or 3
minutes ~~of~~ Exp Cover

Try Thick solution of soap
so it will form microscopic
soap bubbles - ditto
Colored with phenolphthalein or
aniline black - sulphur melted & cast
Try anhydrous glycerine -
graphite. Solid Chloride Calcium
Camphor, solid Chloride
of Ammonia, Solid black glass
Solid Sodium - Solid Anthracite
Solid Turpeth Seafeather
[71]

Boat cleared 2000 yards somewhere 3rd year

Bal 0 - 1050 yds

Exploded 1.41.10 sec
in 1 minute 500 ft long
2 " 1000 ft "
4 - too thin, Wind 20 knots
2 min 30 sec only
Thick haze 1500 ft long
on 13 min head gone
a-mq -

The Explosion was too much something wrong

at 6 min still see haze in distance,
7 mins still visible -

This is different from the bomb previously recorded as it did not reach ship for some time & was partially spread out by the wind & thus made it thin - the haze however would make it hard to see ship at 1 minute if it could be seen at all -

Effectiveness increases enormously by decrease in speed of the wind - The number of bombs exploded is directly in proportion to speed of wind when approach to that of ship & few if it equals ship in same direction

400 ft Cargo boat

In turning any ship when on course | 100% change.
If turned to 90° in 1068 ft from Bow,
100%
97½%
77½%
47½%
13½% – 90° width 54 ft

In other words the width of the ship as a target, is
400 ft
290
310
189
54 ft when 90°

Have it all hand out now

The bombs we use is a can with front fuse cap all made of metal – several Vials 1" dia of Glycerin put in then ½ lb of chlorate 20% Dynamite then sand wet put in & packed accordingly – There is very good Confidence for this big of Chlorate –

Materials for bombs

Cryolite, melted & powered
Sulphur black, powered
Monoferrous sulphide
Melted & powered
(wet of Sulphur Melted & powered.
Water powered —
Fused NaOH, Fused Carb Soda, Fused Zinc Chloride
Fused Fused Antimony Chloride, Bitter Antimony
Dichromate by H2O in air to
White crystals Chrome
Fused Ferrous otro Ferric Chloride,
Fused Naphthalene,
Melted paraffine —

Experiments for Rampart

1 = Put magneto down by a stick only 6 ft below level & boat for torpedo using audion

2 ditto 3 ft.

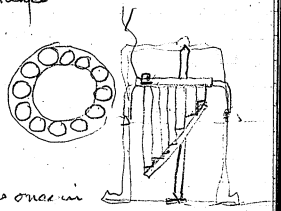
3 If ok at 6 ft fasten the stick to boat run boat 6 miles hour + listen for torpedo use audion note noise going + stopped —

4 if ok do same thing with Moors recorder keep within 400 or 500 yards of 4000 yard stake

5 = put Microfone down
6 ft with tubes up to
air not using bodanaco
4 Grey Bell — | dettes
Mosquito —

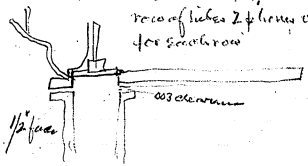
9 found out nearest
place where Rumpzail
Cauter dong docked

Revolving Resonator Tubes
003 clearance



Revolves once in
4 sec

27" dia — 44 Tubes, giving $\frac{1}{4}$"
between each tube, dia tubes 2"
Phone fixed in fixed ring. Tubes
above revolve on Cauters, Double
row of tubes 2 phones one
for each row



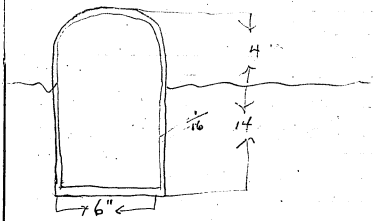
Bore of Lyle gun on 192 – 2½"

White Smoke used in Movies

Flour 22 oz
Powdered Charcoal 22 oz
Wet Nitrate Soda – 6 oz
Dry Nitrate 2½ to 4 oz –
Standard oil Red Engine oil "Calol" 36 fluid oz
Water 8 oz
mix flour & charcoal & some dry Nitrate, add oil then add water to which add balance of Nitrate Na
Bake in slow oven 4 or 5 hours
Choke draught,

Costs 5½ c lbs wholesale Lyle & Co

Lyle gun projectile weighs 18 lbs



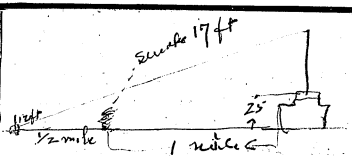
Buoyance	14.2 lbs
Bomb	1.06
Ocum etc	2.5 lbs
TNT	1.0 "
Counterweight	3.0
Bare	.531
Walls 1/16 thick	6.35
	14.441

(8)

Investigate why pumps on steam vessels gives so much noise get rate + fixed, probably Condensing water should discharge in the air above water line or it may be tight packing somewhere

Using the sun a heliostat + Revolving mirror throw sun in eyes of submarine gunnery –

Have 60 ft mast when a fight is on with Spotter at top, then throw smoke Cover by Lyle or bombs by Country. Then submarine Cant see ship but Spotter Can see submarine



Sub Cant see Vessel if mast is down, yet gunners can easily hit sub. if mast up –

When smoke is 15 ft high Cargo boat 1 mile from smoke + tales 1/4 mile from submarine, ship cant be seen –

near Scillys + 100 miles out stopped. Chaser boats should be able to detect sub running on top or charging at 4 miles –

With Lyle's gun & no naval guns
the Goat should have
Dummy Naval guns & have
Lyle wear them & fire to
make believe guns are OK

The port hole men sighting
for Submarines should have
Electric button to give
signal of sighting on
periscope & be provided
with a 300 yard smoke
rocket sight the periscope
& fire to give everybody
on board exact direction
Knowing spot is 50% of
the game & there will be
no confusion

Put a Sail on one of
the false Steamer smokes

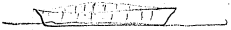
On Cargo boats a very small
bell should be placed at
Stern that can be rung by
listener mounted by
test has Microfone &
2 or 3 microfones used
so can switch in or out
any one -

It is likely a Submarine
sends out the Commutator
waves to the sea or gets strongly
but receiver can't hear as
slowness of Magneto &
Induction Coil & Receiver
think Microfone is best
for them & probably
Chalk telefone would bring
them out loud as it has no
self induction possibly
Audeon would have to
be replaced by Revolving Resonator
possibly audeon will work well and care

Think by painting boat
white or nearly so, when
burning Moore smoke one end
or other according to wind
+ 2 or more I above the other
can make a hazy trail
will cover the boat &
resemble sky line —
steam naught work —
possibly blow in a white smoke with it

Funny Burns being down
my sweet Dream [illegible]

If white smoke is used to
make sky line, only would be
length of steamer hence,
if smoke should spread & die
or thin out in 30 yds
+ a member was along
boat steam would be in
a cloud —



½ inches, white holes in their
steam used, 16 on a side —
Everything settles off white —
both sides thus make 25 ft
apart, usual sample steam
pipe in Locomotive boiler
Authority of Brown

Raining — I just realize
2 miles away a steamer
dark top & bottom with
white streak whole length
the rain makes white
streak perfectly blend into
sky line — I thought at
first she had a top deck —
I saw sky line through
This was on sky line — when
got to land then can see its
white streak

Eventually the smoke haze against a white ship can be very little — unless skyline, or a very gentle rain. Drops about 6" apart are shown when shock waves —

Perhaps water drops will be necessary & smoke (white) will not absorb light right or scatter it properly

Canvas then center, where skyline causes seen may have to be used in the wind as might angles to ship Odenso, the Canvas guardrail at side used —

possibly white smoke could be blown from the 16 pipes with holes by a blower & only have one or 2 ounces of smoke on board

Try Experiments with steam & a solid substance & which melts at temp steam probably Naphthalene to form a steam on water globules possibly oil will do it blowing steam then oil —

Wrote Dally

Blow air or steam thru
hot saturated solution
of soap to make a
distance fog

Fred Ott is making the
Revolving Mirror of over
6 mirrors, rotation
250 min | has given
25 per second to
Submarine means Eye
which on account of
persistence of vision
should blind him.

Fast sailing yachts, inside
short lines of 50 fathoms
Sailing at night. Black sails
everything black - Microphone
detector for catching
Sub chap on top.
When near, have guns
ready throw up an
20 sec flare and fire.
Yacht will make no noise
Yacht to have sharp
bow -
The flare is to be shot
in direction of sub
so they cant see no
perhaps several flares
of local action -
It will be 2 minutes
to submerge, can fire
4" gun in 10 seconds
Could get in 24 shots

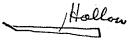
Suggest to ~~Comp~~ Passengers Boat men
they have a rope ladder at
davits fastened to boat ship
50 ft long

At New London see how far
Can hear a sub on top
Changing Our boat stopped
+ also running -

Sailing Yacht.
Noises + Creak of spars, jaws
against mast, Creak of blocks
Shriek of the low waves
gurgle about the stern +
rudder, pound of the ~~waves~~
bows + Breaking of waves
when sea is choppy or
rough also noise due to
Coming about or Tacking

Have 15 ft kite rudders all
along side of ship at low
angle to run out 50 ft,
all thrown overboard when
torpedo heard,

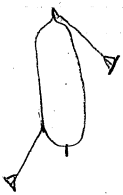
Explode +



Hollow 9"

Operator eye pressure when
closed to ~~avoid~~ prevent
light getting in Eye
Condense moisture from
the Eye — 3 layers
of glass Evaporator I
or cloth one rub dry
if closed 3 moonsails <
turn 30 sec to about right

If there is doubt about strength of Bow to take large Kite one can by throwing from the Stern on opposite side



Rolling of 192 Complete Cycle ~~14~~ seconds

Kite + Rudder full speed of 7/13 Made complete Circle 2 min 30 sec not dropped out in water Then slowed up - 90° in 37 1/2 5/8

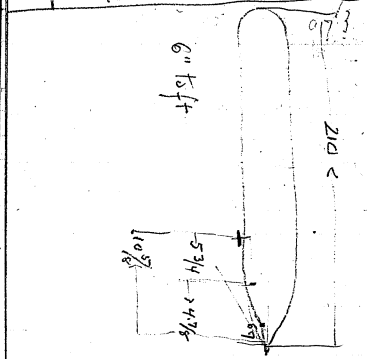
Changed angle Kite runs out further made complete Circle 2 min 10 seconds

Make 2 Revolving Resonators - & a little oil.

1st 1 6" start, 2nd to go down & small one for higher 6" to 2"

Logbook Sandy Hook Light Vessel
365 days Ending Nov 30 1920

Sea Smooth	121 days	30.4%
Moderately Smooth	196 "	53.6%
Rough	47 "	13%
Very Rough	1 "	.3%



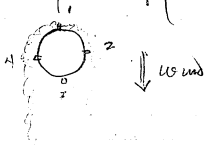
Claude Stanley McDowell
Lt Commander USN
Tel 1270 - N Lowry
Sub Salem -

Naval Reserve Base
Capt W A Edgar
Stale Pier -

Think there is a bug in regulator
Bell telephone receiver
Think outside is closed in on
magnet side, whereas it seems
to be rather open allowing
sensitiveness is greatly lessened

With resonator think big
tube Cone used for
Stetoscope & this will
prevent Crossing

Invisible periscope -



1/4" pipe holes, blow off steam
with soap-water 1 2 3 or
4 according to wind

New Resonators
gives for 1st 60 high 3264 Vib Sec
" " low 1234 "

gives for 2nd high 1230
low - 575
3rd high 570
Low - 185 -

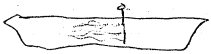
For Taking out H from
Submarine Use pump from
battery depot - through
Lead Coated plumbago
Lines - Continuously -

Depth of Cycle Gun
20 1/2"

Camouflage

3 white 1 black - latter 6" @ 8" wide -

2 miles very white as whole on sky line, 3 miles @ 4 at times, black stripe just removed by 6 p.m. Whole dark except front top edge which was white. Whole boat appeared not white but darkish or dirt color, at finishing front 2 or 4 miles could separate black from white no blend



Standing still - only 10 ft Running 10 knots

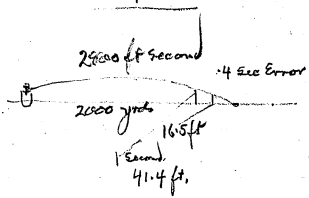
Evaporates top soon
wants oil or soap

Req amount in bulk of Rosin a 1/2 lb 20%
(5 lbs Rosin) - Smoke
NG - small in amount & disappeared in 25 seconds - Wind 10 miles or less off New London

2nd bomb with Concentrated liquid soap saturated at normal temp - Made hot sol and at it cooled added cooler to keep soap in solution -

Amount of Soap Sol
Equals bulk of Clean
off other shells 1/2 lb
20% - absolutely NG
3 ft high 15 ft long &
gone in 5 seconds Rollen

Try Chloride Sulphur + Carb Ammonia separate 6 rattles, free S or Ably Cl



Shell shoots a beam downward anyway, if arranged like an Interrupted shell & fuse head blocks out forest,

The time fuse can have an Error of 1 second although Bowen says shells have an Error of only ·04

Things to feed into steam for Camouflage

Soap water (Conc) also once with glycerine
Cylinder oil
Machine oil or Engine oil
Melted Naphthalene.
✓ Camphor Methol,
✓ Kerosene,
✓ Benzine (Pet)

For surrounding periscope glasses + objectives in Conning Tower, use a Hydrofluoric Compound + Explosive shell.

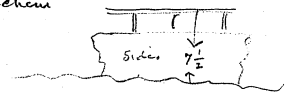
20.36
19.86
19.33
18.79
18.27
17.68
17.08
16.45
15.77
15.08
14.31
13.48
11.56
11.52
10.27
10.27
10.14
10.09
9.84
9.69
9.54
9.39
9.22
9.04
8.36
(103)

According to Bureau Ord Times fuses vary 18.69%

Prussian Specifications for time fuses
Mean time of burning shall not exceed 0.13 second

fuse cord 1 ft. 30 seconds -
2½ seconds to 1 inch -

Sachem



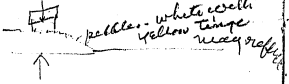
Cargo Boat Skin Fas at 11 Knots
42.3% of whole

Resistance of 4 - Kite Canvases
4X4 - Towing - about
156 lbs pull | 5.3 HP

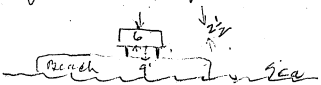
I notice considerable
twenty whale snakes
from Dubrovnik running
on top = with only little
waves went up generally
8@10 ft but when high
20 ft or more

No 1 Tint of part of 192 painted
White lead & lampblack –

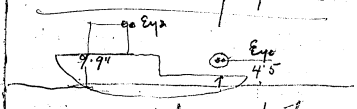
No 2 still lighter shades of #1



Bottom of boards about
feet above water line,
pebble beach 1 ft ~~[illegible]~~ lap
of 6 inch to lower part
of boards 1 ft —



Skyline not blue but cloudy
white, – blue away up.



Polyanna beds

between flickering badly &
all gones of 4 white
boards boat run 1/2
mile –

Abandoned Fort near
N London good chance
for practice shot long
distance –

~~Also 2nd~~ 1st shot abandoned
for didnt work right 1/4 lb
~~Hyde powder~~ 1000 cc
Oleum — 3" tube reinforced
at powder chamber —
after explosion nitrol —
poor, Oleum Can not well
burst —

2nd Shot — photographed
1/2 lb Ky Sporting
rifle powder —
Very good light on
the water — projectile
17 ft above water
OK along sky line —
1 min Fair 2 min
powder burnt
up but Oleum

Smoke settled out
This shows worst time
fuse 1/4 sec is ok & good
Shell all went pieces
End 3/4 blew out didnt
strip threads —
Oleum End closed

by 4 screws overlapping
End of Oleum Can
1/8 inch to tear it —
5,30 —
Scarcely any wind
Photos take side wise
which is worst Condition

I made away. bright flash
from a window, kept in Eye
while our 6 at moored
100 ft 1 sun 1/2 hour
above horizon

No 2 is painted out +
painted white for
tomorrow — No 1
still same but as
white part of 192
Sun down behind
horizon - it is almost
invisible where 192
lay anchored - 4 white
are very white
Red yellow not so

Visible as white about 1/2

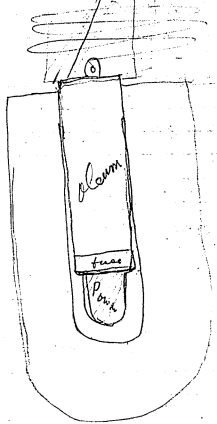
Nearly dark see only the
4 white

No 1 seems good on sunlight
side from Bipin till dark
+ probably when sun has
just passed Vertical line -

Red + yellow fades out
surprisingly quick
as light leaves
white is worst color
possible -

This morning 6 am with boards
in shadow they are all practically
black - But the Red yellow No 6
is yet black. at 7 am can see
No 6 as red - No 1 black
2 3 4 + 5 dark but lighter shade

920 AM - #6 quite red No 1
quite dark 2 3 4 shady
slight violet



11 AM - #1 darkish 2 + 3
dirty white, 3 dark violet
4 still darker, 5 dark red
6 lighter red - all from
192 Several hundred ft
away - no sun direct
on boards all getting
light from general
deflection. This is easy
see big font

X X parallel with
boards & in shadow
but get reflected
light -

11 50 AM - All boards
out of shadow - Light violet
No 3

12.20. pm No 4 deepest
Violet is best for measurable
& No 1 next,
Thenmore the sun approaches
right angles. the deeper
the shade
at 1.50. when boards
Came out of shadow
Lightest Violet was least
Visible, & & no 1 was
rather dark - in 25 minutes
all had changed. deepest
Violet # 4 best & No 1
2nd best.

Make hydro projectile, with
space for Sodium to make
gas when water gets in
so it floats —

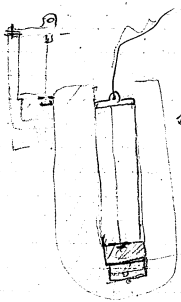
Balloon float with wind
take 2 lbs alum &
1/2 lb powder with string
fuse using wind —

Lyle gun Coast Life Saving
Same size as on Dreadnaught —
15 lb projectile # 7 flax line —
Elevated angle 14 deg reaches 200
yards, with more elevation 300
yds. at 15 deg 8 oz in ordinary
wind on level 600 yards can
be reached with line dropping
with water before projectile
has reached limit —
Brown think would go without
line under favorable Condition 700 @ 800

Charges equivalent to 1/2 oz of Sodium

~~Correct this~~

The air in contact with the sea is in our favor to the extent of 6.25 ft. If there were not for the effect from the air today the boards would have disappeared in 8.67 miles whereas they disappeared in 6.02 miles. This is equal to the range ships up to the rail and deckhouse above is correct as Polyana makes 7.73 minutes made



Small life line
Wishes lanyards
Hung from adjusted
so when it comes to
end of line should
be tied it pulls the
free opposite of a
parachute jump
charge

Polyana goes 1 mile in 7.73 minutes at full speed

8 20 am all the 5 white boards back light black
No 1 blocker - haze is very strong where sun rays strike on haze against hand
It's a fine morning clear, few fleecy clouds yet haze bad
It will be difficult in morning to see ships as far as later on the day on account of the morning haze - Later, some day scarcely any haze
So hazy that at 9 am the lighthouse we called at can just be made out.
think this usual in morning

12 noon, smoke got going strong —
Tar is used sometimes
Something chokes them
Comes ok again —

First smoke decay 3 ft dia
12" chimney off Abandoned
fort, 1/3rd of one can full of
Coal tar — started 10 am
Sun shining on it makes
dark Greyish white, but
high up in sky looks dark
Enough — but very faint —
wind very light Handkerchief
stands straight up 50

Stack should be 24"
+ body probably 4 ft
should have at least
4 or 5 times as much
smoke to be right for

a stiff wind, smoke goes
up so it can be seen 1/2
mile away 2 1/4 times height
of Mast on Jackson —
Say 150 ft, 3 times
for several reasons
Something got choked
or it gave very little
smoke but came ok
again — probably choked
from lamp black —

The bottom rod going
down 10 ft also is
entirely too lightly
braced, it wants to
be a dozen times more
strongly braced
It burnt out a little
after 12 o'clock
If jars had been filled
would have lasted
12 hours —

(11)

No 3 test

Today test, Clear day
not much wind, sea rolled
Polyanna some, Very hazy
Compared to No 1 + 2
Sun not clouded.

No 1 Board. Sachem tint
we painted on

Then	# 2	90% black	10 white	
	3	80 "	20 "	
	4	70	30 "	
	5	60	40 "	
	6	50	50 "	

No 5 was about same tint
as test on No 1

Sitting down 4'8"

No 2 disappeared by Eye in 1.28 miles by glass in 1.62 miles, gravel & dark Unable probably more than 8/10ths of it
Standing 16 ft above sea

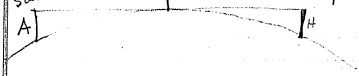
No 2 by Eye went in 1.85 miles
No 3 " + glass 2.93
No 4 3.44
Then good result due to haze + proper tint.

No 1 quite visible when No 4 went out.

Vertical Strips 50 50 about one inch wide, each
get measurements from Rowland -

New lot of Movie smoke powder sent up by Dabby
15 lbs in iron pipe — Expmt 25

Woodflour	3½	grams
Natral Soda	22	"
Sulphur	3	"
Charcoal	3	"
Rosin	6	"
Tar	14	"



Height H above Water

miles	A 8 ft	A 15 ft	A 22 ft			A 8 height	A 15	A 22
1	4.711	6.00	7.001		31	10 38	11 64	12 64
2	5 22	6 51	7.51		32	10 45	11 75	12 75
3	5 62	6.91	7.91		33	10 56	11 86	12.86
4	5.94	7.23	8.23		34	10 67	11 97	12.97
5	6 24	7.53	8.53		35	10 77	12.07	13.07
6	6.5	7.79	8.79		36	10 87	12.17	13.17
7	6.74	8.03	9.03					
8	6.96	8.25	9 25					
9	7.18	8.47	9 47					
10	7 38	8.67	9 67					
11	7 57	8.86	9 86	Hull				
12	7 75	9.04	10.04					
13	7 93	9 22	10.22					
14	8 10	9 39	10.39					
15	8.25	9 54	10.54					
16	8.40	9 69	10.69					
17	8 55	9 84	10.84					
18	8 70	9 99	10.99					
19	8 850	10.14	11 14					
20	8.98	10.27	11.27					
21	9 00	10 30	11 30					
22	913	10 43	11 43					
23	926	10 56	11 56					
24	939	10 69	11 69					
25	952	10 82	11 82					
26	964	10 94	11 94					
27	976	11 06	12.06					
28	988	11 18	12.18					
29	10	11 30	12.30					
30	1013	11 43	12 43					
	1023	11 53	12.53					

Lampblack with about 1/10 of Linseed + 9/10th. of Turpentine
Paint is quite thin, and all amount of dryer — Cobalt Dryer

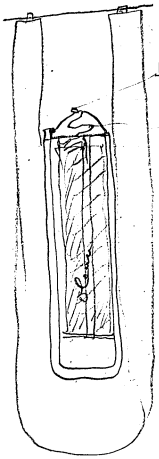
Pure white lead Paint as we buy — thin it out with Turpentine — and dryer —

Beaufort's weather Scale

B Clear blue sky
C Clouds
D Drizzling or light rain
F Foggy
G gloomy dark stormy looking
H Hail
L Lightning
M. Misty weather
O overcast
P passing showers
Q Squally weather

H Hazy weather

Smoky haze
Indian Summer haze
Clear sky line
Hazy
Very Hazy



	Statute Miles Hour	Pressure lbs/sq ft
Calm	0 to 3	0.03
Light air	8	0.23
Light breeze	11.3	0.62
Gentle Breeze	18	1.2
Moderate Breeze	20	1.9
Fresh "	28	2.9
Strong "	34	4.2
Moderate gale	40	5.9
Fresh gale	48	8.4
Strong gale	56	11.5
Whole gale	65	15.5
Storm	75	20.6
Hurricane	90 & over	29.6

~~Energy what for man of~~

Primers Diazobenzene Nitrate
proposed as a primer Berthelot
page 291 instead of Hg fulminate

Dangerous —

Sept 15 – 9 am – boards in shadow
light clouds – blue patches, can
look at sun thru clouds only
for an instant.
sky line much less hazy
than No 3 last day
wind breeze. a few patches
Caps –
No 6 lightest
No 1 + 5 next lightest
No 4
3
2
2 + 3 about same –

Why can't Instrument
measure vel of wind

Why wont Theodors'
wheel with photo on it
go on weather

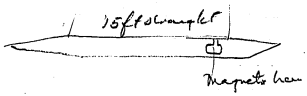
on pilot deck looking all
boards against sea
background –
3 best seen observed
by white cloud –
can just look at it
Now little lighter
No 2 best against
invisible badly painted
warm –
against sea 3 most noticeable
" sky 6 "

Send for my Balls
Dr. Chemistry -

Have the 5 boards photographed down on 4X4 or 3X3

Sudan 1500 ft away
Eye. 8½ ft above sea - ½ of the Board is against background of the sea

10 Twit shutter will take cars of moonlight nights of any degree



water carried along by friction, Rankin says 10%. may have to be 20 feet long

C13L

Boards Sept 18 pm - not furnished

No 1 - all black no white stripes on yet
2 10% white
3 20 "
4 30 "
5 40 "
6 50
7 60
8 } all white not yet striped
9
10

Sun obscured by thin fleecy clouds
Observation from deck
of Drachen 1500 ft aceby
d East Visible by aquinft -

3.37 pm	# 3
3 55	2 + 3
3 56	2
3 57	2
3 58 Clouds vary	3
4 04 }	2
4 13 }	
4 25	3
4 35	2
4 40	2

4.47 pm -	# 3
5 25	3
6 pm	4
6.15. dusk	4

Disappearance

6.20	gone	# 4
6 32	"	5
6 36		6

6 41 No 1 + 2 + the 3 white visible by glass

6.54 - No 1 + 2 + 3 whites barely visible with glass

6 55 - all gone except 1 + 2
6 56 " " 1
6 57 All gone & its pretty dark

Very little haze, clear day only fleecy clouds much blue sky. Sky look dirty white.

Nerum figures out that at 4 miles away from periscope assuming the 26 ft German was equivalent to 23 ft of good sight that 2 feet of a Cargo boat would have a sea background

& the 6 columns of ship would be on sky line

further Sub goes less of ship on sea background

with Eye Vision from Sub 16 ft up only 1/2 foot of ship would be on sea background 4 miles distance

If with 26' periscope equally 22 ft + ship 6 miles away! – all on horizon

HCl Condenses to a liquid at 10° Cent + 40 atmospheres 1.27 Specgravity for bombs fumes

1 at HCl Combines 3 atom H_2O

Anhydrous dont attack Mg Zn or Fe

~~20th~~

~~left Grassmoot at 1150 full speed all at 1239 3rd head moss bles 1st sand from Pilot at~~

When Sub Views used in sum the 1

Fire liquid HCl Bow gun
of " NHy Stern gun
both make fog with #20 of
air & afterwards deformed
together & make NHyCl
smoke —

Cloudy Very Hazy sunset
Sun 8.0 hour up
6 10 pm 15 min after
sun set. #6 entirely
invisible from sachem
1500 ft away #10
Very white & conspicuous
No 1 & 2 more conspicuous

tested the white of
No 3 with a little
pale ultramarine blue

it appears to make it a
little darker than No 2
Can very faintly see with
glass at 6 pm that
board has blush cast

Yellow pine boards still
visible (unpainted)
but nothing beks 9 & 10
— 1 2 3 + 4 + 5 is about
as conspicuous as yellow
pine — faint Very

6 17 pm 1 2 3 4 5 + 7 8 9 10
6 19 1 2 3 4 — 7 8 9 10 visible
6 20 1 2 3 4 — 8 9 10
6 25 — 9 + 10 —— 1 2 3 4
yellow pine row
6 27 — 10 — 1 2 3 4
6 30 —— 1 2 3 4 faint

450 am - good aurora
60 ft up reddish thence
to horizon blue —
water bright from
reflection + —
Boards all black
Can see #10 a
little lighter than
No 1 —
A + B just as black
as others — I can
see to write OK
Clouds all around
horizon, clear above

5 am - arc searchlight
Can be seen on every
board, 8 9 + 10 very
bright white, covers
380 ft round.
22 amp arc —

Quite light on ship
good light coming deep
shadows from light
reflected from the western
sky
No 10 - shows whiter
than No 1
B with eye shows yellow
A Dont - angle probably
as it gets lighter the

are has less & less effect
so that at 5.20 it's only
just perceptible.
Apparently the sky
line gets brighter faster
than the light on
Sky No 10 gets.
No 3 - Blued is same
black as 1 & 2 —
both A & B very yellow
& distinctness from other
No 8 & 9 & 10 look
white, Especially 10
but sky line being so
much brighter 10 is
so sharp Silhouette
& darkish
Aurora up higher
now & nearly gone,
sky line blush white

There may be some change
with front light yet, = sun
not up yet, 5.30 sun up I examined
very faint, just discovered it
9 & 10 very white but
sky line so much brighter
its a clear silhouette -
still blush Caste to sky
line - slightest squirt
blacken No 10 -
but Can see dif
in tints from 1 to 10

Eq.

There is no doubt but that for
Early morning best pure white
paint is by far the best of it
Could be strongly illuminated
it would be better still
When sun gets up to where
it is hard to look at it
The silhouettes are even
sharper probably on account
brighter sky line - fleecy
Clouds coming in overhead
Easily -

Cant see Plum Island
West, all blue haze

Can just see land on the
right with Naked Eye but
not with glasses. Land
nearest shore D.E

Lam

to here

at 6 AM - the sky gets so
bright in the East | that Even
10 ~~[illegible]~~ only shows a
tint of white - | A black
B dark with yellow tint.

Its doubtful if any
amount of illumination by
fast digits will convert -
The very bright sky line in
the East | Mirror probably
would do something -
& probably only hazy

A sub, in the morning a boat
in West from East
would be nothing very
far on account of the
haze - ~~[illegible]~~

at 630 am sky line East so bright all boards are black — only hope would be mirrors to reflect this strong light on boards —

S end here looking West
N + S would see thru
deep hazy + Ships be ok

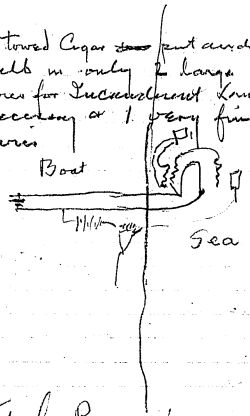
Even the 2 buoys 600 yards to North E look hazy Cant see plum related on the lighthouse N E

The strong silhouette is really due to want of light on boards

with little test boards on ship held up in shadow white shows ok for sky line but if put in deep shade it shows as dark as No 10 at 715 am —

9 am, still silhouette but not so sharp No 10 somewhat better than No 1 —

In towed Cigar ~~[illegible]~~ put another
built in only a large
wave for Incandescent Lamp
necessary or 1 very fine
wave



Telegh Range finder
Hope to come down
to Oyssmport bring
Cylinder Recorder
Dark Records &
Microscope want
Record sounds from
Europe

also funnel & to see Wrens
& bring the 40/1000
Recorders as they work bad
at 100 times
of Phonograph to listen
with /

25

Prussian blue stripes
3.15. slight flaky clouds
on sun No 2 | 90%
Blue best but little
whiter than Sky line – Sodium
600 yards away
Dont have the dirty glum of
Lampblack more like
Sky line/Color Think
the Ultramarine was best
as most ~~[illegible]~~
Prussian blue + gnco
White sun may be slightly
Nearer to equator
with Wilbur and

I notice also No 1 has tinges of lavender which would most pronounced with ultraviolet 80% Ultra.

3 20. No 1. 95%, as best
Can squint at it fine

No doubt the blue
Moon mainly imitates
Sky line & when sun
is West.

Oct 3 26. Cloud Come over
sun & best was 6 70% blue

5 30 Sun out again
No 1 best.
in 2 seconds Clouds &
No 6 best, in 1 second
No 1 best.

3 36 - now all too light
The depth of shade in this
blue not enough to do the
biz - with bright unclouded
skies, it would require
97½ to 99% Blue -

Next time must make the
blue deeper shade.

It wants a blue that seems
settled - as it approximates
sky line Color much
better than Lamps black

5% is not fine enough
should be only 2½%
difference

3 42 Cent are Cupola on
longeland 11 mile.
hazy - due only to gradient
of sun

3.45 No 1 entirely too white
Clear sun Cant squint it
anywhere near out.

6 Boards now stripped
Can even see stripes on
No 1 with shade.

3.50 pm No 6 actually
appears white Even No 1
is whitish.

It is probably we have too
much white lead in Prussian
blue & that pure pigment
like Ultramarine or
Cobalt blue is better with
no white mixed.

4.15 No 1 & 7 too
whitish.

4.17 No 1 by squint has a
greenish hint also it
reflects light not matte
Enough No 2 about,

No 1 is 95% Prussian blue
thinned by lead white to
a shade as deep as possible
without making it appear
black in the shade. Then 5%
less up to No 12

Reason of Matte is probably
due to Prussian blue on
a Colloid whereas Ultramarine
is ground up particles
of a blue transparent
substance —

4.25 all slightly white,
+ NG + Cant be squinted
in the least,

437 - only Gardiners Island
Can be see
Woman on Big Gully getting
very hungry - dello L Hymn

Something wrong with No 1
more than board out of matte
the Very unevenly painted
Board is Tip down to
South -

452 White boards
unpainted have a
yellowish tint here
glasses

455 Hazy at Big Gull
decorns. Cannot see window
in Painted brick house
+ a white line is forming
at Edge like island
far away

5 pm 3 4 5 6 7 stripped
now through glass look
decidedly yellow when
squinted - 1 2 + 3 just a
shade of yellow - 8 boards
done quit for the day 505

507 - Sun seems to be about
1 hour above horizon + in
the yellow part, that probably
accounts for yellow tinge
on boards - sky line is west
yellowish -

512 No 1 now look green
+ seems evenly painted
whereas west 1 2 + 3 seem
uneven

No 1 Two boards
Enormous difference in tint
between 1 + 2

Cant sqeunt out anything in the least,

5 25 started, 3 or 4 sqeunts best, 1 dark

5 27 - 5 best Look Red
5 30 6 "
5 31 6 "
5 32 6 gone
5 33 7 & 8 gone
5 34 1 2 3 4 5 6 vis
5 35 " "
5 37 " " glasses
5 38 1 2 3 4 5 & 6 vis "
& all above sky line considerably,

5 40 1 2 & 3 vis in glasses — Dock still vis not 5 ft out as high tide

5 42 - 1 2 3 vis in glasses also dock - 5 faints very conspicuous even with Eyes

5 45 ditto —

5 46 Cant see 1 2 & 3 whites ~~[illegible]~~ also Dock

5 47 Dock all gone Except 4 whites Conspicuous Yellow with Eyes, Just Hazy. very + yet boards are above water line

quitting dusk

5 50 see outside plain in glasses

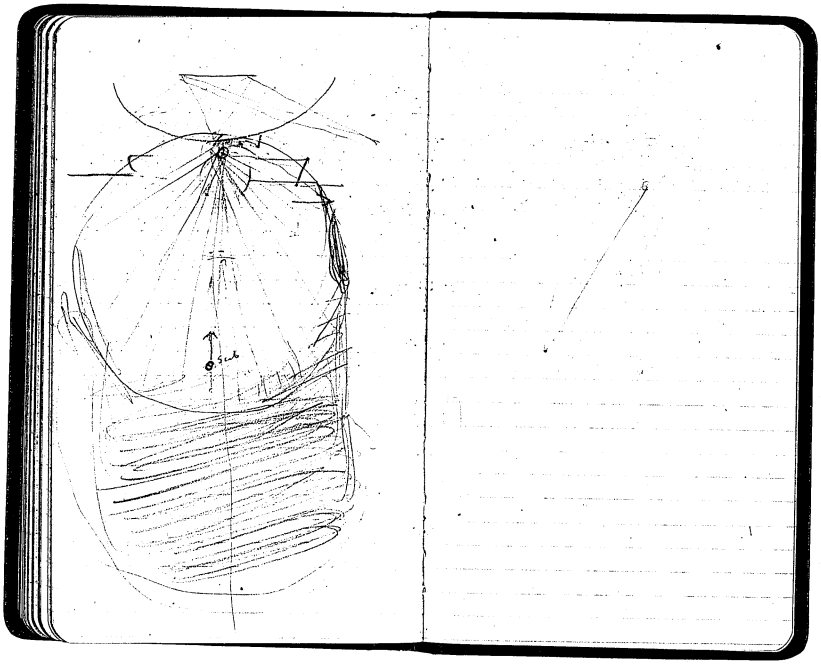
551 - whites trawling
553 all gone

PHENOMENON

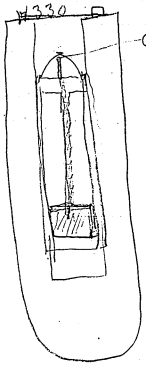
It will be essential I think if we are to make Cargo boats invisible at Short distances - & if Hull is not perfectly Camouflaged - to put a line of shutters from End to End of Boat between Bridge deck & Stern & Bow Houses to prevent U Boat seeing the sea between - modification & see if its as

We used to paint the single ultramarine the other day that was so good
Ultramarine Co
38 Park Row
11 M marked

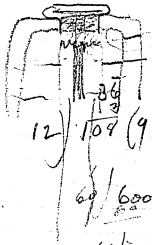
As pressure on blue was too light we now mix up 11 M with oil & very little Turp also added about 5 Thimblefuls Dryer - Hot 2 to 3 mark
Product - Used cooled
Dilution - We shall paint over on top of the Prussian blue
The paint is about as black with 11 M as it can be made & work practically with Brush


Sub

60) 80000 (1330
60
200
180
200



4 @ 5 sec
fuse wire



12) 108 (9 ft

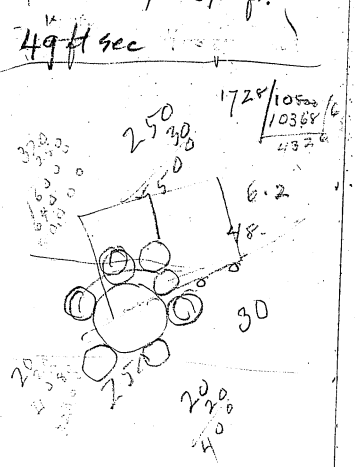
60) 6000 (100
900

60) 4200 (66 ft sec
360
600

66) 1000 (15 sec
660
340

Torpedo 12500 yrds 37500 ft.

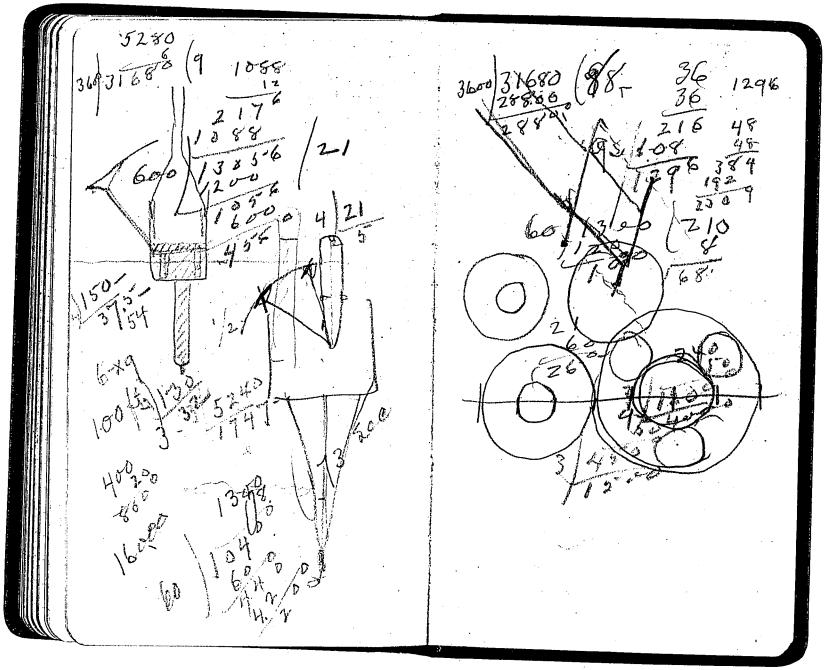
49 ft sec



60 | 395 length
360
35
5 length in min =
100 = 300 | 10800 |
37.5

6.6 12
12

12 5280
15
26400
5280
792
20 | 7920
1980
22 ft second
37
74
820 ft



Notebook Series -- Pocket Notebooks
Notebook, PN-17-00-00

This pocket notebook was used by Edison, probably during the period September 1917-March 1918, for notes pertaining primarily to war-related experiments. Included are experiments, some conducted aboard the Navy warship USS *Sachem* in Long Island Sound, on sound detection devices and other means of locating submarines. Also included are notes on smoke bombs, kite rudders, Lyle gun projectiles, camouflaging techniques, the use of smokeless anthracite coal by Allied ships, and other war-related topics. In addition, there is a considerable amount of information copied from published sources, such as a table of the number of destroyers owned by each of the Allied and enemy nations. There are also references to the dismissal of experimenter Absalom M. Kennedy in December 1917 and to experiments at the U.S. Naval Station in Key West, Florida, where Edison resided during February-April 1918. A few of the notes relate to disc record experiments. Among the employees who assisted Edison in Key West were experimenters Albert G. Gerbode, William H. Knierim, Sherwood T. (Sam) Moore, Paul D. Payne, and Samuel C. Shaffner. There is also a reference to Charles B. Hanford, a retired Shakespearian actor who served as Edison's personal assistant and advised him on camouflaging experiments. The pages are unnumbered. Approximately 150 pages have been used.

PN-(17-00-00)

E 1710

☆2996

16
5.0
12.8
144
13-
43
144 20
18.7

When at Lab. find best vehicle for painting Lampblack to get blackest surface

also White to get colorless surface —

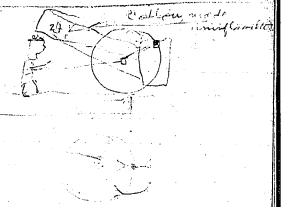
and Combinations of Blue in white to get Great sky blue

Dynamometer shows
1/2 Manilla rope
1 lb pull per 10 ft
1000 ft 103 lbs —
8 miles hour

The Torpedo shaped Buoy 27 lbs
at 8 miles hour

Norum says at 12.6 miles hour 11 knots
Torpedophone will pull
6.7 lbs = when same says
pull the dynamo 8 X 30

Backer

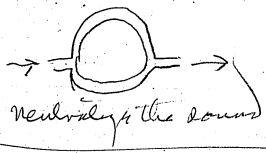


Mix flour of Na NO3 with the liquid fire to stop smoke.

Blunderbuss - 2" bore - firing cylinders of inflammable liquid 500 ft time fuse hot air and nozzle add feeder - also for liquid or tins + etc -

Henry Chemist say something wanted to stop rust of metal parts of aeroplanes —
Zinc paint —

Perhaps muffler Exhaust may be quieter as Exploding time fuse one device as long as the other



Neutralizing the sound

Steel wool may cut a bullet all to powder when shot into it —

Crozier writes that Army needs "tracer bullets" incendiary bullets armor piercing & improvements in premetro —

Frenchborough Wreck
Fired with shells
desired to salvaging
in a valuable coal shot
from gun, Legend Evans
for Stuff quote sold
Leaflets on boat -

Dr C.H. Williams Boston
Harvard University
Measure shade

235 pm - board on Dachau
at dock - Mirror -
Beam reaches clear
across from mirror
Rapidly changes angle
on board or mirror
loose

240 - 1" above Crack
245 2 "
248 - to 4" second Crack
251 1" above No 2 Crack
254 - 2½" 2 "

3 fam parallell w/ Crack
3 $2\frac{1}{2}$ 1/2 way between nail marks.
3 06 – up to 2nd nail –

6 mm to width of board
$4\frac{1}{2}$ inches
is movement on
End of 10 ft long
6×10 –
Longitudinal end has
shortened over a foot
in 6 months
Later · 3 12 to back
full length.
Something changed
now – $1\frac{1}{2}$ ft shrinkage
usually –

again ·
3 26 parallell –
1" ~~below~~ Even with No 1 nail hole
3 36 – 10 min $2\frac{1}{4}$ inches
moved 337 – full width
of board $4\frac{1}{2}$ " " min –

See if water from Nozzle surrounded
by cast oil well go further than of
only water – Vice versa

or oil cuts + Soap Sol Extremely antiseptic

Off Scilly's Area 160 X 160

32 Submarines kept scattered by Destroyers

32 ships enter + pass thru

These ships on a 5 mile vision will be sighted 35 times during if whole of 160 miles is made in daylight or 1:1 ships per submarine.

If these ships when they enter zone in daylight + stop, only 3 of them out of 32 would be sighted.

If 16 Submarines are operating in the area + still 32 ships make the voyage in daylight 20 ships will be sighted or .6 ship per submarine If the same ships stop when daylight appears + only run nights none will be seen in day time by Submarines

Oct 4 last
Arrivals at British ports
2680, sailings 2742
13 Vessels sunk by Mines or Submarines.

Beaufort Scale of wind

		nautical Mile	Wind Pressure
0 = Calm		0 to 3	0.03
1	Light Air	6.9	0.23
2	Light Breeze	11.3	0.62
3	Gentle Breeze	15.6	1.2
4	Moderate "	20	1.9
5	Fresh Breeze	24.3	2.9
6	Strong "	29.5	4.2
7	Moderate Gale	34.7	5.9
8	Fresh Gale	41.6	8.4
9	Strong Gale	48.6	11.5
10	Whole Gale	56.4	15.5
11	Storm	65.1	20.6
12	Hurricane	78 over	29.6

0 Represents a sky completely cloudless
10 " sky completely overcast

New Chart 24 trips thru Zone
Duplicate 6 times = 16.5 M

24 trips	normal Subs seen	Subs M laying still
1	14	4
2	14	0
3	16	0
4	16	0
5	17	0
6	20	1
	97	5

144 trips

Slot 7 mile radius 14 mile width
statute Miles

Now 24 Submarines

24 trips	4 day Subs seen	only night
1	22	1
2	26	0
3	26	0
4	23	1
5	23	0
6	25	1
	145	3

144 trips

34 Submarines
off Scilly by random
146 Vessels passed in 5 mile
Radius 10 mile circle —
Submarines if run in daylight
in Zone would have
seen 143. If they had
stopped at first signs of daylight
& waited till dusk & started
the 146 vessels would not
have been seen but by
3 submarines —

One reason why April may
1917 lost most submarines
longer daylights less rain
than in winter new lost
submarines —

34 Subs
10 mile vision radius 20 miles

67 - passages in —
143 Sub saw the ships —
If stopped days
9 submarines would
have seen ships

According to Chas of
there had been 146 vessels
300 submarines would have
seen the vessels
+ would have been
caught or seen on stopping
for daylight 19 times instead
of 3, as well 5 mile radius

If Cargo boats make trips from
England to USA & back in month
loss in stopping twice — 3%

a correction should be made for refraction of light at sea level on account of this which may 7 or 4 you can see 7 or further — average conditions sometimes worse sometimes less or better —

Wanted, number of vessels sunk, attacked weekly in Scilly area. This year & approx number of vessels entered in & out, above 1000 tons —

West Coast Ireland Harbor
Foilas Limerick —
Galway, Killary Bay
Clew Bay Rhys Bay Sligo
Donegal — Blacksod Bay
& thence to Lough Swilly
on North End.

75 Submarines Hopping and
29 voyages —
85 Sights — % 2.93 per ship
3 Caught & sunk — % 10% — .10 per ship

75 Submarines placed Best possible by Brown
32 voyages
72 Sights 2.2 per ship
6 Caught 18.7% +.187 per ship

75 Submarines placed by Brown
29 voyages
60 sights — 2.06 per ship
7 Caught 24.1% .24 sights per ship

~~Brought 1 ship sighted on Every 4 stop volume Running 60 my ship sighted twice -~~

(1)

32 Submarine

100 Voyages

14 mile circle

84 sighted day run

12 " still

36 got Home without sighting

Haphazard arrangement

(2)

about 5 over [illegible] Haphazard 32 Subs

100 voyages

82 sighted day

6 " still

39 got home without being sighted

(3)

32 Subs same arrangement as (2) but 10 mile circle 5 mile vision -

100 voyages

70 sighted running

none caught sleeping still

47 got Home without being sighted -

4

32 Subs same arrangement as 2 - But 20 mile Circle 10 mile Vision -

127 sighted -

18 Caught sighted still

20 got Home without sighting

Wear aircraft get French
Pilot Gabbs —
West Coast including
Brest

For sounding when approaching
short, tow a 1000 ft line or less
Buoy with diving rudder
Controlled Electrically
Thru low line, when
strikes balloons the
phone in Buoy gives
sound, tail death bag —
meaning preventing gas device

Radium letters
or numbers
buoys or storage
cylinders

[10]

32 Subs hunt
100 voyages.
3 mile Circle (fog cars)
1½" Vision —

100 Voyages
29 sighted.
none standing still

Theodores arrangement
100 Voyages
63 sights
49 - got thru } Running days
Only 1 sighted standing still.

Why Cant all destroyers be
like also Cargo boat with
devices which if Cargo
boat is ready to sink 2
destroyers can't chase it now
To hard work

as only 1/6 of the Cargo Steamers is generally lost, the other 5 Compartments not being able to keep her afloat

Get an English year book with almanacks Moon rises &c,

Get longest list of sunken of all boats since Friday — also daily Cables of further ships sunk

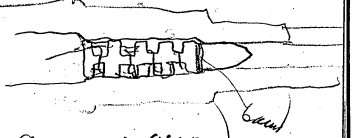
Last day before night run be without [illegible] & heavier Camouflage —

going to England — on account Federal Bonds 11 Knots is least speed for seg 9000 ton boat Cleveland bound from N York in ballast 8½ to 9 Knots least The standard speed is 10 Knots

see paper in my pocket about getting students Brooklyn Eng. high school making uniform forms —

It is probably possible to take observations when entirely overcast & sun cannot be seen by allowing the barometer to shine on a white board & with a vertical wire observe the very slight shadow giving height & direction

Projectile —



gases go around & press in on slower thus using higher charge

No 1 Camouflg	100 %
No 2 "	80 %
Smoke bombs 3" gun	80
Lyle gun smoke bombs	60
Kite rudder	50
Fake steamer smoke buoy	60
Torpedo detector Still	90% Wa
" " Boat moving	50
Submarine	[illegible]
Underwater propeller & fin	50
Antiaircraft Cook in Zone	100
Strategic	90%

Route no ships [illegible]
Normal Tu [illegible]
Coast send submarines
there. to do the big
Camouflaged. Commerce
[illegible]

The Cairo
1615 Q St

[illegible] ing 15 to Aug 31st
316 000 Tons

105 – $5 158 000 [illegible]
8. 216 000 yr
but average 576 000 small Tons

Average Tonnage of boats sunk by Submarines 2111 Sunk by mines 2236

Of all vessels sunk 4.3% are sunk by mines –

Yarrow results 172 Cases of
Fighting Dist M – attacked + sunk by
Torpedos 12
by Gunfire 5
attacks, damaged but not sunk 5
attacked + escaped without serious damage 65 – Observed Dist M but not attacked 86

British

		Over 1600	Under 1600	Total
Feby	24	15	6	21
Mch	3	14	9	22
"	10	13	4	17
"	17	16	8	24
"	24	18	7	25
"	31	18	13	31
April	7	17	2	19
	14	19	9	28
	21	40	15	55
	28	35	13	48
May	5	24	22	46
	12	18	5	23
	19	18	9	27
	26	18	1	19
June	3	15	3	18
	10	22	10	32
	17	27	5	32
	24	21	7	28
July	1	15	5	20
	8	14	3	17
	15	14	4	18
	22	21	3	24
	29	18	3	21
Aug	5	21	2	23
	12	14	2	16
	19	15	3	18
	26	18	5	23
Sept	2	20	3	23
	9	12	6	18
	16	8	20	28
	23	13	2	15
	30	11	2	13

Total in + out tonnage 1916 all English ports Excluding coasting + war vessels –

14-0 000 000 Tons

This is 383 000 tons a day

average boat sunk 2100 tons

gives 182 steamers in + out of all ports of England Ireland & Scotland daily – no foreign trade,

Feby + March sinking of Steamers

No Sunk in daylight	170	66·9 %
" Twilight	40	15·7 %
Moonlight	28	11·1 %
Darkness	16	6·3 %

Total Sunk 254

(10)

Cargo Boat saves 600 miles going Via Halifax instead N.Y. – or 2 1/4 days in the run –

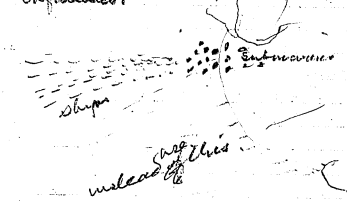
Destroyers 1917

	average tonnage	Number	Tonnage
USA	814	74	60 219
England	781	188	147 620
Germany	530	154	81 494
France	442	87	38 465
Japan	425	52	90 412
Russia	666	135	90 412
Italy	608	51	31 010
Austria Hungary	525	18	9 450

If 780 ships sunk from Feby 1st to Jany 1 – 12 months at rate of sinking in 8 months of 1917 1164 ships per year

Then Sunk in Daylight 778
Twilight 182
Moonlight 129
Darkness 75 1164

We are running into Submarine in massed formation, and in such a way that all our ships are unfolded.



Naval hydroaeroplanes are of no Value in blue water but only in green and there only over 80 fathoms, as reflection of light from bottom will be too weak to give the shadow

13 ships pass in & 13 pass out of danger Zone from Portugal to Shetlands daily as per USA clearances — (Boat 34 days for round trip)
This dont include ships passing thru Gibraltar
Hence 431 vessels Engaged —

Figure out arranging pilots on Vessels & Destroyers
also routing of destroyers
Pilots can go out on round back on Cargo boat
destroyers by destroyers at Gibraltar

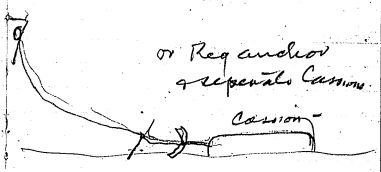
When boats stand still use small sight buoy to keep near to prevent effect of drift —

USA Vessels cleared in Foreign Trade

July 1/16 to July 1/17

Countries	Ships	ship average	
Azores & Madeira	10	3450	34 548
Denmark	215	2060	443 312
French & Atlantic	1087	2911	2.911 747
" Mediterranean	324	2500	818 780
Gibraltar	107	2500	269 504
Greece	72	2300	168 834
Italy	756	3000	2.273 736
Malta	2	2006	4048
Netherlands	528	2426	1 286 389
Norway	211	2370	499 436
Sweden	149	2060	307 291
Portugal	39	2000	73 846
Russia in Eur	72	3000	214 945
Spain Atlantic	100	2060	206 045
" Medtn	127	2280	289 676
England	1941	3883	7.537 471
Ireland	187	3390	634 505
Scotland	102	2605	265 938
Iceland	16	605	9.688

13 ships enter Δ Zone in + 13 out daily — from Coast of Portugal up to England —



An ultimate analysis of the shipping of England is reduced to one thing, to wit Coal which she ships to all parts of the world competes in this & the freight charge would be enormously increased as Coal is the Return Cargo,

As per US Statistics — Clearances for Portuguese & all ports north Europe gives 13 ships per day passing in & 13 ships passing out is 26 ships passes a point daily — Assuming a boat can make round trip in 34 days —
There will be 9490 passages 1/2 in 1/2 out
Each ship makes 10.72 passages per year (10) round trips —
Crossing danger zone 21 times!
This requires 431 vessels operating at once

Quebec	to	Kirkwall	2679
Quebec	to	Jory	2540
Quebec	to	Liverpool	2647 n
"		Plymouth	2665 s
"		Fastnet	2545 s
"		Scilly	2678
NY	to	Queenstown	2876
"		Plymouth	3002
"		Havre	3249
"		Gibraltar	3225 — 693 Marseilles 3918
			860 Genoa 4085

Gibraltar to Marseilles 693
" Genoa 860

NY to Bordeaux 3318
NY to Pentland or Kirkwall 2977

Cargo Boat,

Draft 24' 6" Rated 3630 Tons actually Carries to Plimsol Line 5000 tons Now loading 2' above Plimsol line — Increases this to 5700 tons or 14% increase.
or 57½% more

166 in + 166 Vessels out of daily British ports, made after arbitrating those sunk by Submarines

~~Approximately from Lloyds Reg 1916 a tonnage of British Steam Vessels, lost, broken up etc for the year was 249 428 tons. 1.9% as against 36% by submarine~~

All allies + Neutral shipping
963 sunk by Submarine to
3.69 " by Collision
or 91.48 sunk by Submarine to
.852 wrecked

English Torpedo boats
105 burn oil 110 use Coal

French 24 use oil 69 use Coal

American -
53 use oil 21 use Coal

Night runs in Channel put dazzlers + noise apparatus mistaking Destroyers, on Cargo boats — Sail boats Can by

Good French Ports

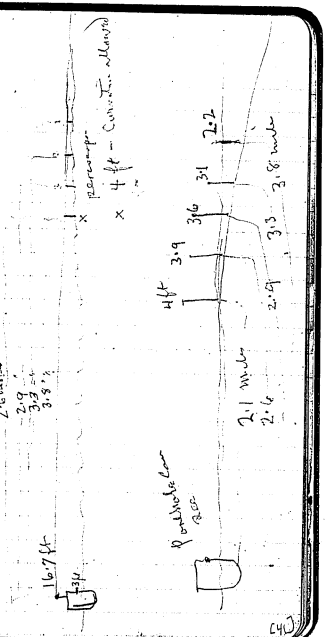
Quiberon
Rochefort
Ile d'Aix

Rade de Trompeloup

Ascertain on glass in
Salt water how soon
film water clears off
glass so vision is OK
right in seconds.

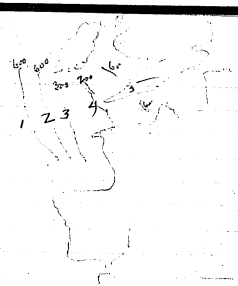
Outscheme Two Dragoons
3" 2 1 & 1/2" diam

Pick upon hole visible —
Distances in which stroke seen 4 3 2 1 ft perpendicular
against sea background —
2.6 inch
2.9
3.9
3.3



Depthing on claim of climing up water
for brave rubble drop that speed
13 inches

Sea Naval & Military Record -
May 16 1917 - Edward on 6 raises
item - Barometer & inefficiency
in Navy - Dainty alarmed sea ft



Rough Approximation -
30 min Basin -
If No 1 Barrage 600 Miles " 20 Destroyers
11 boats to Destroyer -
No 2 Barrage dells
No 3 " 300 miles 10 Des 22 boats
4 200 7 " 32 "
5 120 4 " 56 "
13 hours rest progress 600 miles
Each 4 Boats [illegible]
54 hours of no slip 106 hours with
stops 51% efficient against 60%
on Convoy

Lloyds 1917 shows in
Mech. Book 6082 sailing
vessels
Approx 15% are above
1000 tons

This would give
912 sailing vessels
made up of which Engines
Condition or Sail only

of 900 ships sunk
Channel Scilly across to
French & West Nashant
sunk 21.5 %
Nashant 3.5
French Coast 12.0
Making Scilly 20.0
" Fastnet 26.5
83.5 %

10% on East Coast England

129000 Voyages per
year from England
but + in per year to
foreign Colonies

130 Voyages when boat
is sunk

352 Ships Steam driven go in + out
daily from all
English + French
Ports. Coasters are
NOT included

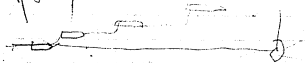
Find out if 5000 Ton Cargo
boat loaded 2 ft above
plimsoll mark in Calm pen
sink to within 3 ft of
top of hull by taking
on Water in Coast.

At night around
Harbor 20 miles
area - Have
Distinguished navy
appearances
Covering the Area

find out from Mami
when from the front.
all about depth of
wave Entering channels,
also average width
apart of trenches
1 2 etc -

GREAT

Sailboat dead on to
Sun or on the Sun
Circle, then both sides
individually lighted & both
Equal, to keep Course
Zig Zag



Can steer by Compass
& shadow
(why Cutter ship be steered by
= Shadow)

Steer all day & straight
to sun + stars all
night —

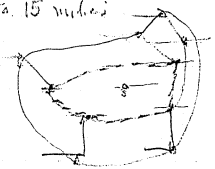
Light Cargo boats with
a square mast + yards
as 25 ft square sail
see bigger smaller boat
with Spill Knock down
mast can see + tow
use in fog —
test it on Sachem
Can use [illegible]
[illegible] to [illegible] Canal

Yesterday to 1st June 8.638 500 tons
Arrives 8 259 864
Dif - 378 000
but allow due repts Sept 1st

Nantes
Sables d'Olonne
La Pallice
Le Verdon
Royan
Trompeloup
Bordeaux
Bayonne
Quiberon
Port Louis
Lorient
Concarneau
Douarnenez
Santander
Bilbao

available
friendly
Harbors

Whenever a destroyer on SOS or otherwise finds a sub, he is to radiate out a general message to ships in coming at sub within the circle. ta. 15 miles



946 sinkings in 9 months.
The 633 ships now building in W'Va, will last if furnished as fast as sunk up to July will all be gone by May — or 633 will last 6.65 months
it goes by Number & not by tonnage

Get Lithograph print like French showing whole area of Sub W'ce from
Make out daily chart in book form from 1st July

When get chance at Lab
Steel Trying on disc from
Hot Ball, Req disc process
Tel room [illegible] for crystal detector [illegible]

find out where funnel
was ~~[illegible]~~ attached or when
(10) time

To stop Sparks, add
a weight to diaphm of
Disc Receiver until Pitch
of Muffling is recorded.
also try smaller Chamber
alone & with weight.

If Req straight voyage is
11 days or 6 days load &
unload – Total 23 days
100%

Then on Coasting – loading in
ports

12 hours –		1 day	97.8%
24	"	2	95.8%
36	"	3	93.8
48	"	4	92
60	"	5	90
72	"	6	88.4
84	"	7	86.8
96	"	8	85.2
108	"	9	83.6
120	"	10	80.2

Steamers carrying petroleum

Tons		
1000	9	9000
2000	49	98000
3000	68	204 000
4000	70	280 000
5000	86	430 000
6000	53	318 000
7000	41	287 000
8000	10	80 000
9000	3	27 000
10 000	17	170 000
	406	1.903.000

Sailing Vessels carrying Petroleum

Tons		
1000	19	19000
2000	21	42000
3000	3	9000
4000	4	16000
8000	1	8000
	48	94.000

Sailing Vessels gross 1917 Lloyds

Tons	Number	
100	1349	134 900
200	1400	280 000
300	651	195 000
400	354	141 600
500	242	121 000
600	166	99 600
700	194	135 800
800	132	105 600
900	128	116 000
1000 + over	930	1.581.000
	5.546 - Vessels	

Can shadow out by sun & moon as well & probably twilight & in any direction

We should be sure of our radio Opers. as they could give a good position

[55]

1913

1913: Steam Vessels		Tons gross (35 @ 50% more for carrying)	net	Average gross tonnage
England & Colonies	10 009	19.849.167	12.025.570	1984
USA	1 209	1.575 223	915.950	1300
Austria	419	1.010 347	629 444	2410
Danish	552	711 094	415 880	1300
Dutch	661	1.256 742	794 840	1940
French	987	1 793 000	1.029 113	1810
German	2 019	4.743 046	2.877 887	2340
Italian	591	1 274 000	773 848	2150
Japan	1037	1.500 000	956 702	1440
Norway	1597	1 870 993	1.122 577	1170
Russia	716	790 000	463 000	1100
Spain	547	826.000	506 000	1510
Sweden	1043	943 000	551 964	904
	21088	38,722 412		

USA dont include vessels on lakes

How about twice size Anchor + 3 times more Chain + bigger or if head wont wind ft 2 anchors

What Count Effel Tower & big Marconi Stations give bounty or Continually practicing of Sub sighted, attacks etc

Dachem Explo

1 = Mast light

2 = Canvas against sun (sailing)
also Stern Canvas – + Pilot Hu Canvas
rapidly changing + fastening

3 = Kite Rudder taking + also
side in bow + dropping rudder

4 Measures sky line all
directions clear also, cloudy
also Woods, shore line

5 Lyle gun projectiles

6 3" gun smoke bombs

7 Fake steamer
1/2 = Turn Smoke 1 + Kite + get lines
then, fire again, burn + stop engine
see + shoulder – then Fire Rescue

8 Dynamiter

9 Big Shutter

10 Magnesium Paint –

Nov 8th from Feby 1 to date
1027 ships sunk all over world
by Sub –

109 on East Coast England alt 10%

Rosyth & Coast Scotland
great Naval station –

Hurley = Crawling Sailing
Iron Gerry – Wrecks
not speed 15000
Easy 2 500 A.P. Tug
Trawling Suspicions

250 Sunk in Channel
prisoners since Feby 1917 to
Oct 30

Dissolve TNT in a Solvent then precipitate it in a Volatile liquid not sol water & dry slow to get it Excessively fine to see if quantity used wont freeze so it would give an Explosion of first grade

Barges towed by Ocean going tug in good weather to French Channel ports

Capt W F Halsey USN
Room 178 Navy bldg
Phone Branch 266
Bur of Com & Transport
Mine Division, Rte

1084 Ships on N of Spain sunk in 8½ months 450 of them sunk by smaller Subs & 630 by Ocean going Subs

In 1915 USA had 26700 Vessels
Average Gross tonnage, 314 Ton

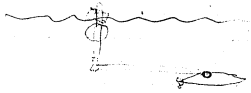
		Gross T Average
Sail wood	5706	190
" Iron	160	1550
Steam Wood	4.671	195
Iron	2281	2130

Dr wood Expert Spray
Soft swamp ground with
Water & [illegible] years &
Continue thus than cover
with dirt & Continue till
get [illegible] degree of
Heat [illegible] for burning
tail

Kennedy need address
care
Stamford Motor Co
Stamford Conn

James Hussey
Marine Architect
Greenport L.I.

Sec of Anhydrous Arsenic
acid is solid or liquid also
fumes in air & with
Sodium Cloum also of
Arsenious acid solid Cloum
or Arsenic acid for
Smoke shell.



15 ocean going Barges full
Coal leaving at Buffalo Canal
go [illegible] tugs now
flying [illegible] Navy Yard
[illegible] —
DRW will stop canal soon
Rankin 7' 6 will go down —
Chesapeake 9 ft - [illegible] 2 years
Rankin only [illegible]

Erie 300 @ 500 boats
240 Tons - 94" ft long
17' 6 wide 6 ft draft
owned generally by men in the
lower northern — Towed by
steam owned tugs 200 [illegible]
200 additional boats around
NY City for lighters & storage

Boats old & only fit for
low grade ft Coal Lumber etc

Lehigh 86' 6" 10' 6" 5' 2"
draft - 98 tons - 190 boats

Schuylkill Canal
36 boats put in Canadian
quickly 12 more by labor
106' 6" 17' 6" 5 ft draft.
Single boats 165 tons
Double 125 tons Easily -
Erie - 500 - Lehigh 190 Schuylkill 48
others 5 9

Champlain Canal has boats also

~~Onondaga~~

Ask Daniels to find out if Navy has tried any tactics against Dynamite & expulsion

Ask Department who has flame projector in charge — also Viscously & gasoline liquid hand Sheppard Daniels has

show Cropper Zime dope ask if any use to him to take box to office

See Lyne Black about Canal boats tugs etc —

Tell Daniels about Relcos setting down fuse & TNT Dobbins

Tell Lieutenant Dept about Australian & ~~Dardanelles~~ Gallipoli

Wolfe always claims
Chase with nice
idea —

Ask Senator if he
got Albuquerque map
& when —
say no statistics of
Coasting trade,
on oil from
Mexico & Isthmus —
& if any Gentleman of my
Albuquerque map
Give French Michelas
Attache nice smile —
Thank Nicolay —

While Mexcraft
to let Kennedy go a
day will pay his
salary for reasonable
time this permit
him get a job —

get oil data from
Bureau Commerce

Chicago is acct
generally 6 days
4 days in Front
uses 200 tons oil
40 driven — Thus exists
for 6. 7 Orl & Stos mouth

Dannels about Log bombs Submarines

Disc - Specially prepared
Linseed, Cheese cloth and
Etc Then mix some oxidizer
like fine Perox Mn, Pb, Fe_2O_3
Etc which will Crack or heat
in pieces - Resinates
high ~~softening~~ point -

Get a Copy of Our Letter
to Gregory for use in
Washington -

Heavy Seine Coal barges
across Channel at night
in good weather powerful
tugs - Rhone to Mediterranean
thence Genoa Coasting vessels

Gallon 1 lb TNT
shoot at it when in
right position -
Nights - reflare -
triangulate light behind
so Enemy Cant see it
Country

Dirigible goes ahead
+ drops a Column
Smoke screen —
possibly - black smoke
possibly a Compressed
air spray of Chlorine
bow of ship Vertical
would make a
haze —

Smoke bomb saturated
Solutions - Calf
Nitrate.

Experiment on producing
a Haze -

Strategic Map for USA
Land, - Ford Transports -

Foreign Labor for period of war
only

Mexican - Jamaican Negroes
Porto Ricans -
Haiti - Canadian
Siberian Russians via San Fran
Philippines - Hindus
Norwegians Icelanders
Belgians Interned in Holland
Aleen Indians
Japanese - Portuguese
Poles Czechs Bohemians
Prisoners of Russia
via Mesopotamia

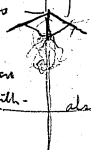
Hose lowered to Enemy trench
+ Centrifugal pumps
+ Clay water, flaso
trenches –

Flammenwerfer – wire with
wick – French chalk, asbestos fibre fine

Lewis Gun big foot
accessory rises +
100 defs shaps on
parts +

Convoy of shelves going
~~20 to~~ 1 foot, [illegible]
wood at base of [illegible]
gauge wire destroyer
[illegible]

Nights – Aeroplanes high –
Drop balls catching saturated
with burning liquid –
to light up trenches – then drop
Bombs –



Reflector –

Lights when
strike with –

Sling on ground
also for throwing bombs

Try on Crows nest with
scope to see into
water better –

Try Crepts on Sachem

160 miles

Ships	1	3	5	7	9	11	13	15	17	19
	2	4	6	8	10	12	14	16	18	20

100 passages using these 20 Cards
8 Sights in 1 & 2 92 in balance
$12\frac{1}{2}$%

Tell Thomas on his Sailors
friends have some Split
Tickets to show Audience
to explain Lecture in
parlor —

1	3	5	7	9	11
2	4	6	8	10	12

25 + 5 — 30
25 + 5 30
25 + 5 30
9 + 1 10
100 — to 16 —

13	14	15	16	17	18
1	3	5	7	9	11
2	4	6	8	10	12
19	20	21	22	23	24

100 deals —
93
7 sighted —

I notice that had over 60 passages before. I sighted then answered sighted clavel & gallon Bad shuffling I think —

1	2	3	4	5	6

13 supplied, [illegible] 01

87 –

6 cards

Shook 1 dice in the 6 following

Tried it 6 times.

	101	supplied
No 1	89 –	11
No 2	82 –	18
No 3	79 –	21
No 4	90 –	10
No 5	84 –	16
No 6	87 –	13
7	89	11

Discs - Very smoky decorated Silicate, Un
not and weak or very slightly
a muddy white water as a rough
~~pressed~~ as a disc a [illegible]
Steam. This poly Carbon.
water observed [illegible]

~~How about Hypsometers
Zeros [illegible] 50° for
warm - [illegible] better
[illegible]~~

E

Prem -

1	2	3	4	5	6
7	8	9	10	11	12

Not sighted 11 times -
obtained 89 times.

Took 6 dice in 1 bag Threw all together

1	63 times
2	66 "
3	72 "
4	71 "
5	80 "
6	63 "

6 Throws

1	90
2	102
3	108
4	103
5	102
6	101

101 Throws gives

(1) 32 addresses the 69

Dont forget to try all high Mt Rizzuto, daylights etc with Sal ammoniac Naphthalene to open pebbles or dices —

Chloramides Reaction is the Sbounta, [illegible] & heat see Vol XXXVI No 13 p [illegible] Chem Soc Jnl June —

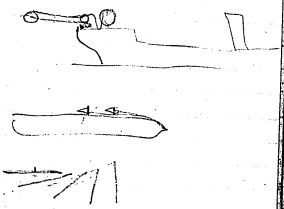
Nickel process — Grand Mallee Oxidizing — ignite to full yellow to make NiO used, then dissolve in 2% H_2SO_4 to extract CuO & Fe_2O_3 —

Chlorinated Rubber -
Rubber dissolves Carbon Tetrachloride
a Chlorinated, gives a
plastic substance
US Pat 1.234.381
July 24/17

Nitrocellulose - get
solvent - use dissolve
& mixture to make
plastic -

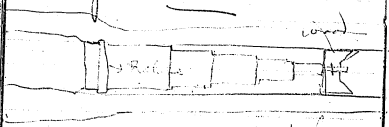
Some of the Canned Goods
May dissolve, use in
mix & powder - Disc

Trolley Pole for
phone booth



Resinate of lead or zinc
Rosin etc dissolved
Asphalt - for disc
instead from -
to Reuse MP Ball
plate of it like Victor
or Regway using
3 times as much

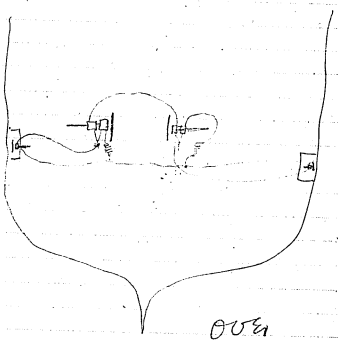
Resemble the powder
mixed with fuses in
Rolls hot. This has
high MP -



or other light
substance -

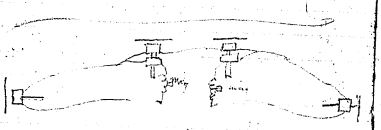
Split so wind does it.
TNT + more to explode only
when behind wreck or
Quit -

If subs are [illegible], can only
be seen 3ft above water
Here, this gunners must be
there to verify gun + gun also
How about this -



over

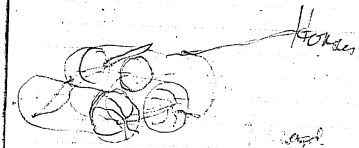
Think can regenerate Horses discard blanks -



Magnet [illegible] on [illegible] line to balance [illegible] in order each side of boat

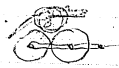
Bridge method:

Let the sea anchor come out by a brake to prevent sudden shock at first force to permit setting the first on brake



Cannon

Groove of cannon wheel



from Aug 8 1914 to April 26 1917

Neutral ships 32%

Sunk

By torpedo	697	18%
by mines	152	
	849 Total	

Dutch	76
Swedish	109
Norway	436
Dane	94
Spanish	35
American	20
Brazil	2
Greeks	6

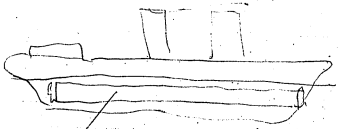
Argentin Peru Uruguay | each

No get greater accuracy in shell why not have a heavy hound at each or 1 and release on rotation will exactly balance the shell automatically run where lighter

out of balance by not being true & eccentricity of loading of Explosive -

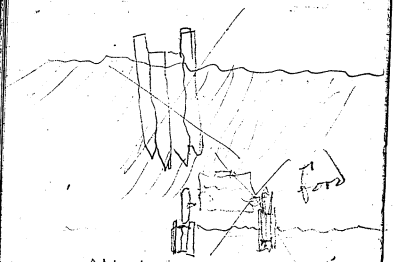
Also in big guns a definite frame work all of smokeless powder exactly fitting gun So its one mass & definite always burning at same time (Geo)

Disc Use Sulphonated picrandum as they dont melt but soften -



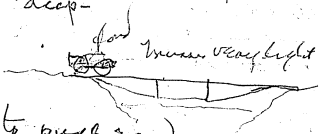
Canvas bag flat shield against sides of boat with air in Reservoir under pressure phone hears torpedo hit on

Protector plate with 3/8 holes with Cap & black powder all on a plate, when bullet strikes lowers Spring by Counter pressure & 6 detail jacks penetrate plate.

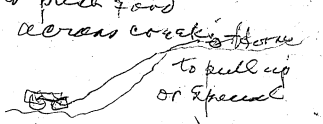


Military road in field.

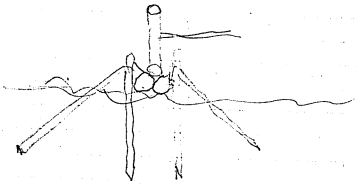
Fords, 5" tires corrugated deep-



to push ford across creek ~~or stream~~



(into alternate) Wire



Daniels -

Young men, not above 35 - Eyes glassy, bright, clear, personal movements quick, nervous, no drink, [illegible] commands - Old men to OK.

Sims, Geddes, Rear Admiral Daniels,

Breathing tubes 25 ft high 1/2 - of pipes coated with charcoal for emergency

Peroxide lead & dry glycerin
Sulphur gun cotton for detonators
TNT - acetyl[illegible]

0002 Sheet iron or may be Copper Brass Wedge only breaking just to splitter wrapped 2 layers 1/4" steel & with Connecticut woods be 4 @ 6" thick to stop bullets -

Run pipe to within 20 ft of Enemy trench & force CO thru porous sand

Sharpeak (special) which in bursting throw out bullets at rate of 500 ft. 200 1000 ft to break glass of Periscope etc - Some with black stuff Wood I

Chain Shot

Chain -

Outside shell $\frac{1}{4}$" mm dia - wind friction. Cause separation gradually & not break chain -

Fire 4" gun 8 @ 10 mch. above water line long projectile, percussion fuse, few lbs TNT, ships along & is bound to hit 2000 yards or so - need not rotate as it will run

probably humble of ok. Could have on hinge Rudder on - Sub Comm tower or part above water -

See Moly about Hydrogen Generators or Buffing - Saw Dennis

Great for propaganda

S America

Scandinavia

Mexico

Southern Hotels

Orient

Think can stop all rest to a Dreadnought by 4 record Mortars for bullets, & different amounts of ~~[illegible]~~ powder —
Using ship itself to fire Mortars —

Plan 8 Zig Zag
Change course every 5 min —

From Minutes	to Min —		
0	5	15	0 to right [illegible]
5	10	45	" "
10	15	15	" "
15	20	15	to left
20	25	45	" "
25	30	15	to right
30	35	45	" "
35	40	15	" "
40	45	15	left
45	50	45	"
50	55	15	"
55	60		

Use Machine guns to break glasses of periscopes
Easily hit by froth of water thrown up by bullets 20 sec lowered up to periscope
should be ok for Summer work

Send to Duchess
10 Condensers and a lot of Resistance Coils for adjustable table to Cancel out all rapid sounds from sea on shore by Tuning

Why Cant small pipe intake at
Extreme end of sub be connected
to Compressor + ~~pump air~~ bad
air from boat pumped into
block + at same time fresh
air from flasks allowed to full
let out at other extreme end
doors being closed + only
leaks equalizing pressure
all tanks blowing kept
full of air ~~except~~

Vickers gun on deck
handle down to Bulls Eye
below, Operators strapped
to Eye. Man above
feeds gun man below
arms, possibly
phone from man in Gun
waist to Bulls Eye

Could use an oil spray
bulletts get oil on it to
make ricochet ~~of bullet~~
wake more apparent.

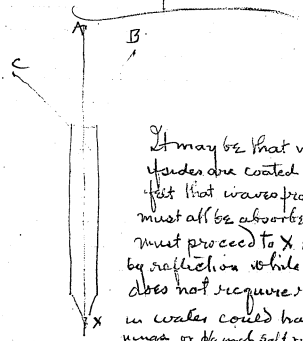
Tell Daniels wood
sash next Armor

Battleships fighting make
lot false splashes all
over both sides eg —
Small Explosive Shells
so Enemy Cant get
range by splashing
also low down
Olenn smoke so
they Cant see splash

Shaffer - dome set in
pressure equalizer
phone to shore through
depending water on
Microfoni - ~~of~~ absorbant
to take up most sequence
out by compression
of air —

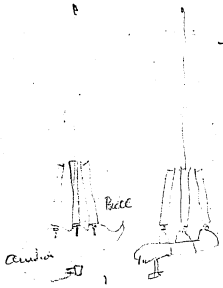
Hammer knocking on side
ship ~~4~~ defend loudness
Pilot of board hears
at front boat ahead
his own being cancelled
out, if he hear all
he is too close, if only
the loudest he is ok
if none he catches
up — Each boat
makes sep sig —
must not meet one ~~from~~ up

at Keywest try white cloth
10 ft square very dark
night & illuminate it
with faint light, need
white & see how far
can see, blinds on it
to take place of red
green light.



It may be that in tubs
under one coated with
felt that waves from C+B
must all be absorbed as C+B
must proceed to X entirely
by reflection while A
does not require reflection
in water coned have
rings or 1/8 inch soft rubber lining

Next number for ~~Jerry Daniel~~ is 46.



Try at Key West.

brass tube 2 ft 1/2" wall polished: mirror

adjustable to a focus –

Make shore experiments from anchored boats to get some fundamental data –

Night fighting throw brilliant shell illumination flares, min 2000 yards or Catch Torpedo boat trying to force in Schemitts this better than Arc lights, use Towing phone 16000 yards 4 pounds one after another

Are numbers over 35 yet limit

Why not put voice tubes & telefoni wires in tubes laid on both sides along side ship under water, & use no active side this almost practical thing —

Also why no use wireless ship with hearing or recognetic. Oscillation + tuned receiver Dot + dash, Never could be quiet act of Eng —

See p 199 Report Battle practice 1906 — also 197 Kansas completed 1911

219

South Carolina, Lieut Comd. Hepburn & Lieut W. A. Corlay —
p 226. 242-3 —

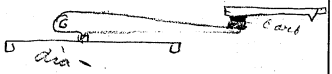
At 20 000 yards & wave 09 is 400 yards

Voice tubes 326-7-8-9
420 on
See Flowers Communication on telefoni — 331
also South Carolina. 332-3
Hepburn again — good service
See 358-9

possibly revolving water phone 1 per second get a compound wave + this in presence of another ship would alter the sound very much
Could do it on Recg phone partially

Next number 55 next.

Figure out in microfarads have larger average to take advantage of great [illegible] [illegible] [illegible]



Battle Practice 1916
p 388, Bad primers,
Holding propellide in gun when firing high angle
389–390

Tracers dont function
390.
arc lights 408.

to trace torpedos at night fire out powders
Calcium Phosphide in jacks → Cause fired to head →

Battle Practice 1916
[illegible]

See 461 – 493 –

For dragging for lost torpedoes use flexible Chain or wire 6" apart ½ P ½ neg

Fire a lee gun over short cliffs

572 — 175 about Range Finder book

At Key West see Subs & ask how long they stay up on the sighting of Cargo boat which they porpoise & how far & how quick sea water leaves glass clear or do they & Cool at clear — practical demonstration can see a ~~porpoise~~ ditto Cargo boat,

See Knerr looking through a tube 1" dia then 1/2 then 1/4 & times. passage of a vessel Can not get speed

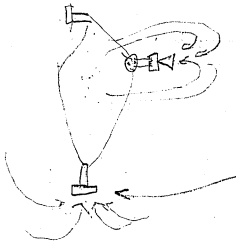
Phone — Lampblack

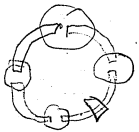
Moore at angle so small too no of inch makes full face Contact, always principle.

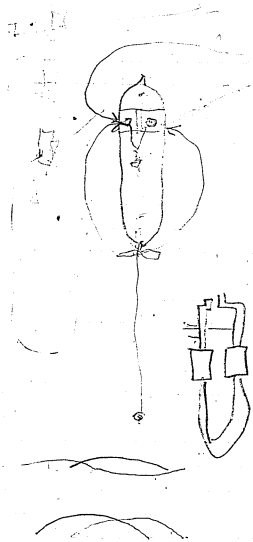
Can print charts of Black & white stripes or in morning Can paste them on Hull bridges & masts & change in 1/2 hour all hands working

Victor System disc Varnish over everything Condensers exp. Masts dry working no use

Blasting bell + cord
mounted, ~~to~~ 7q,



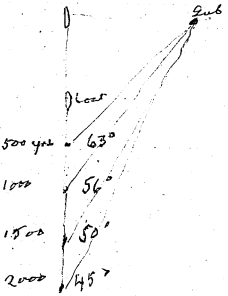




Pull Byron Phone Cable
alone no boat
500 ft 32
1000 64 only slight
1500 98. drop between

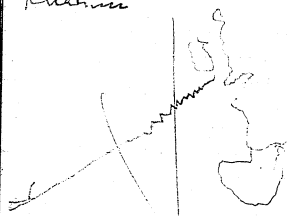
Cable on Cone & block
waxed Cable, white
best by 2 lbs —

2 Red lights. 1 strong
the other very small &
fed with Arthur Use
shutter between
to signal —



Show best angle for mouth
piece of phone —

Kneeman



Why not don't go round
15 min etc – so such
cant take readings

See about Cordon
lights to drop from
aeroplanes –

Lt. Dixon UK K-L #35
He has Parachute.
Lt. Comdr. Olding (automatics.)

Ayres Telescope –

Heidaschneider Opera glass

Windchop when
pitching best glass
to use on glass

Magnetic davits
Inter brat.

Porcelain outside
Wrecked Cracks
above — spark plug
porcelain broken —
spark points pitted
Central Contact

Very slow powder
for making compression
air — for starting
compressor —

Desk of submarine
+ then command of
of Wireless installation
aint done —

5 ft square block
lists on wheels
Contact by magnets
+ Keyboard magnets
by day on shelf

phone & short funnel

differential phone
to Cancel out Coast
sounds

or bridge

possibly a phone across
near to ship plate + no
amplifier but ship's
wireless + Reg tower
phone 4 & another
4 Bell –

ship itself is wireless telephone sub as no amplifier
but does not sound signals

also could find source of specific
sounds if use phones near thing
to Cancel out –

swinging gun 50 Lbs

Moore try 2 micro under water
in series with same current as
with 1 – see if increased
when at Etiene –

All the Sailing Vessels in U.S.
just under 1000 tons

50 Tons	302
75	209
100	254
150	92
200	87
250	60
300	75
350	52
400	66
450	44
500	110
600	113
700	140
less than 1000	178
	1752

Cargo hatch running off on yds
apparatus drops Olive oil on
Phone disabled astern by ex
disappears in definite time. Every
20 seconds.

Lights very high note in resonant funnel
under to make it disappear to get
distance & wrong to get direction.
Possibly The Redmont Mirror Opaler
with Edge well do it, also use opaler
at 10 per second with opaler –

2 CP light –

2 12 hour tubes ESB
to light it – lowed by Cable
wet Electric
about size as my
Phone to get, for steering
let Cargo Cranes at night

(185)

Curtiss R6 Sea Plane 49 79 384 ft

Pilots ear to surface of water when machine stationary in water. 8 ft

deepest draught of fuselage 1 ft

from Pilots Ear to bottom of fuselage or body of machine in water 4 ft 6"

Lawrence Grant White —

Use long tube 40 feet to get direction place front strong all angles reduced

3|840 / 280 3|1140 / 380

by friction.

Swing tube 100 times to get Exact Zero.

4 Sea Anchors 280 yds Good Tow Boat

Just with Tow Line 10 Knots 380 yards 1140 ft 1760

1	7x4 Sea Anchor	280	840	1400
2	"	220 yds	660	1100
3		183 yds	550	1012
4		157 yds	470	881

Ship 880 up 41 ft on 54 knots

with 4 sea anchors —

Yacht must have worked 550 yards to hit supposing he had reached speed of 10 knots

Thus with 285 ft good tow boat.

Have Langley rewound
2 bell phones one
flat 1 long
4 Coils 10 ohm
each on spools
with screw posts
so can use coils
multiple or series

Design Sectional
French mortar
15" shell –
50 lbs. Krupp piece
Light shell –

Hurley – clay rods
in Cargo compartment
bottom to top to withstand
air pressure – or brace
on Crow possibly
air light. Hatchways
stop air – if any
air plates open for
V Equilibrium or water
outlet device screw
for closing –

One man torpedo –

Use Centrifugal shaft to throw water out & make a funnel for air

Thompson

I havent got mechanism of sound as tube of Mercoid longer

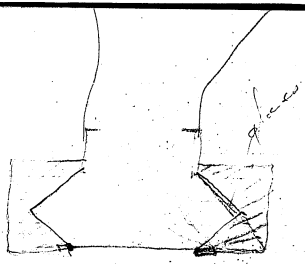
Look at object with Spectroscopic telescope then on dark line see if they are illuminated when arc light thrown on object.

To find position at sea at night look at star & throw a harbor light overboard in direction of star & sail in line

Newman says carbon mirror can be used & throw light anywhere

In an advance, men behind use bombs to blow holes for front men to retreat to

O Eun



Dia — Shape of Chamber to achieve what energy is worth.

12 noon — fairly plain — Navy glass — CMOR worst on — seems to be higher than 5 ft. — Can see it OK with eye 2 ft away from eye piece

520 pm — Sun is now — Can still see periscope but not strong — getting dusk — Sky line light lead color —

535 — Can't see it. — Sky line cloudy + dark — Creamy — now dusky but can read newspaper

Next morning 6 30 am — Sun up behind cloud — Sky line + cloud line look almost same bright — no green or blue — Can't see periscope —

perhaps a little worst of Dur Worth —

When sun is out at 7 o'clock the sheen from water + light from sky line almost alike no horizon line, actually looked like a most good water. No green or blue all reflected light with water not quite so bright as sky line. This is best time for perman when periscope is north or apparently just as good west

7 AM no aegus or 6 Peri

7.10 can just faintly see peri —

7.25. Sun free clouds cant see peri. Water + sky line blend + see like a mirror or same but as sky

Light clouds all over
Sky blue spaces, 1/4 cloud
3/4 blue, sun comes out + out

8 AM sun behind cloud
Cant see peri —

When sea is glassy
Sky + water line have
somewhat same color
but where surface not
smooth best fall ripples
it looks darker + is
distinct from sky line
Color, so glassy surface
is noticeably factor
Perman, +

Microfone

Metal - Mica or hard
rubber - gold leaf -
Chg with 3 to 6 cells, 1 second

wave varies coulomb
of gold with dearlectric
Use Audion —

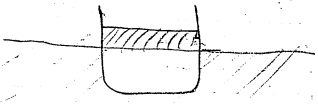
Why Cant an audion
be worked without
induction Coils

or Condenser at X
Try it —

10 am Cant see peri
semi glassy sea seat
sky two very little def in
but can scarcely see
def with naked eye
there appears hazy

Evidently must see peri
in shadow, or roughness

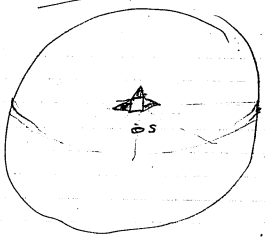
Indications in South west
water not glassy ~~blue~~ green
big def between sky + water
line but in NW where
peri is water glassy
+ not green no clear line
Whole bumbla seems to
be glassy sea line —
SW sharp NW Hazy
due to this —



Average heights of Cargo
above plimsol + waterline
5½ ft on 4000 Low Cost.

1 pm. det between skylines
water bottles but cannot
see peri yet

Dome d-d sucker moved
glass so all things
record NG.
Except colours dim Co
Eyes - can see at placin
to right of perpendicular
words 2 20 pm -



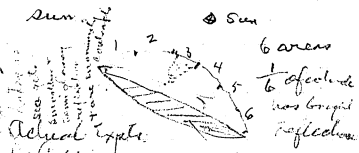
Its worst position for
ship to be between sun
& periscope, no shadows
on peri -

7 am - sea blue, sharp
horizon due to sea not
being glassy - peri
invisible.

934 - went to lee
saw Stern clear OK
clear sky line sharp
as fine ripples away
where sea green
no smooth spots
to mistake sky line

Let spot from telescope shine on a mirror & look at spot which can be followed as boat rolls — put on gimbals —

I notice today calm sea not green from no glassy surface.
That the bright reflection on water due to direct sun.

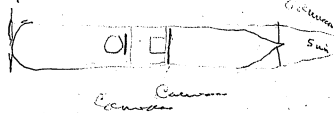


6 areas
1/6 of clouds
was bright
reflection

Actual type
by Capt Graham
1/16 of horizon
gotten in 2.03 inch circle
no white in boat

Can conceal smoke against sun by filling off funnels w/ Mg powder
both smoke below forming & making smoke until funnels 7%
Mg to 93% Lampblack

Adjustable Canopy for



Shadow Sail —
93% black 7%
white —

Then paint
Hull proper or
Sides of Canvas for side.

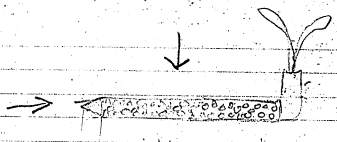
Instead of Mg powder when firing + make comm
use paper beside of Rog
funnel + fire. Photo Vapor
or other light white
powder - perhaps
should have an extra man
to watch + make the
smoke regulate thru
pipe -

Possibly distill
Lime + let it go up
hot pipe - possibly
China clay strongly
calcified -

It is possible by using
a nest of 5 telescopes +
focusing the image at Eye
piece by mirrors or prisms
We could darken the periscope
by superimposition +

brighten the skyline -
or not exactly superimpose
but put the 5 images of
periscope side by side
to make more Cheap

Think input Coal condition
should have priority -
Economy + Cost mechanical
by large air opening
+ all wires bare and
electric - + perhaps
separate batteries in each
tube for pilot or 1st Volt



8 ft long 1½ dia

1/8 holes. 1/16 wall thin rubber

Wave length at right angles
all diaphrm work simultaneously
Wave length end on short
than 4 ft as many diaphrm
go in and out + neutralize

3 Quantum —

[144]

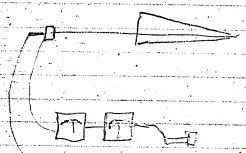
Hanford. L

Glenn Runs down gets out

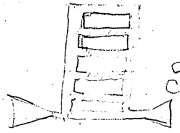
bullet wounds bullet.

Lieut Hart + Lieut Bloom
working on Mat.

Rig up Audion boxes for
W. Miller test Valves



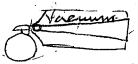
[145]



analogous to
Capacity &
impedance

[illegible] labs Can
[illegible]

Reg Rep Ln horn 2 1/2 × 5/5 — 1 ft
Rep slight Ln horn 2 1/2 5/5 2 ft 8"

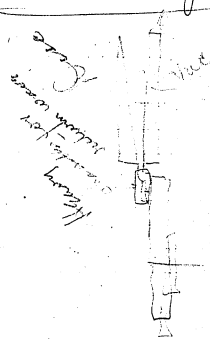


Reg funnel

think it will be louder
for recording
think it necessary for
under Water

~~[illegible]~~ Meats
Lieut Hart & Lieut Blow

position at sea at night
throw Coston light when
far enough astern
bring it by Compass
across under a star
forward angle



Periscope 48" high 4" dia
1200 yards gun on
deck 9-8 shots
4 hits — 1 hit for
every 2000 inches
Equivalent - at 2300 yards 1 hit 400 shots
on ~~whole gun~~ - 1 [illegible]

Think linseed or China
Wood oil mixed with Peroxide
lead or other easy reducing
+ with fibre + asbestos
Resin, will harden
in person + make a disc

The Vacuum Water funnel
30" long has a taper .86/100
of 1/8 of inches each inch
dia 2.8 big end
1/2 small end

Occasionally asphaltic neces to be
OK for ball made disc

Rosin an oxidized of abietic acid -
Lineoleate or chemically
Rosin processed + optimum
processed these will melt &
ice Rolls temp to get up to
softening of [illegible] of linseed & processed -
buy the fast dryer chemo for linseed

Carbonite Asphalt distillation
to raise softening point say
175 just soften, don't melt at
350.

Buy Decorel or simplex
button clock — also Vicol
second pendulum -

3 element @ 3 stage
42 on 4 amp 31 on 3 amp
Amplifier on Anderson directly
proportionalities To Amp on fils

~~anchored – [illegible] bottom~~
~~200 ft cable out~~
~~Noise 18 – [illegible] boat~~
~~[illegible] at [illegible]~~
~~[illegible] 2½ [illegible]~~
~~With [illegible] 18~~
~~Noise [illegible] 4~~
~~[illegible] boat~~
~~[illegible] 34 [illegible]~~

Cable [illegible]
400 ft out [illegible]
50 ft boat on bottom
~~Boat~~ anchored &
signal given for [illegible]
quiet at 18 @ 20
on box to [illegible]
noise 20 ft [illegible]
[illegible]

Two – double twisted
Cable –

When allowed to
rest on bottom 400
ft away & 600 ft paid
out noise was
28 on box. This
Extra 8 may be
moving of cable
by tide &
We now attach a
bag 5 lb sinker to
within 10 ft of
fish & rest on
bottom –

Known ways when boat
anchored & signal for no
noise given but heard
[illegible] in air at boat

with 500 ft wind 2 mm
cable a Extra buoys X
20 ft from fish
8 hear to 10 on buoy
Ranger 46 @ 48
Breathy, Eony 10 sec
gives a rumble then a
sharp then loud sump
then a musical low
note for 2 seconds
then quiet down to
a steady 32 [illegible]
underneath [illegible]
fine steam like
[illegible]
with only 250 ft and
9 hear only to 6
the breathing 20 to 30 seconds

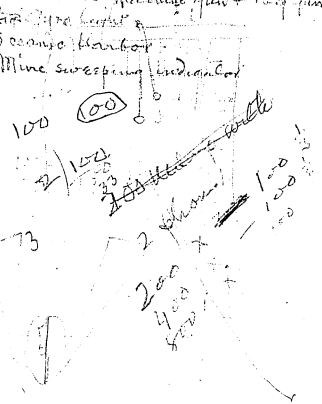
125
4000
500000

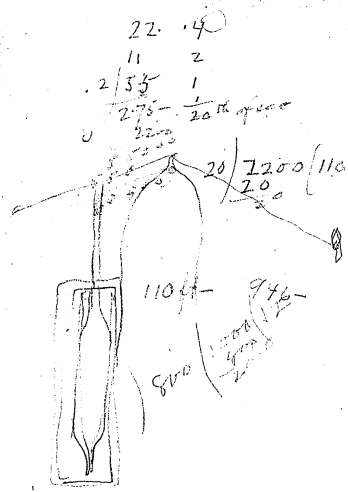
1000
125

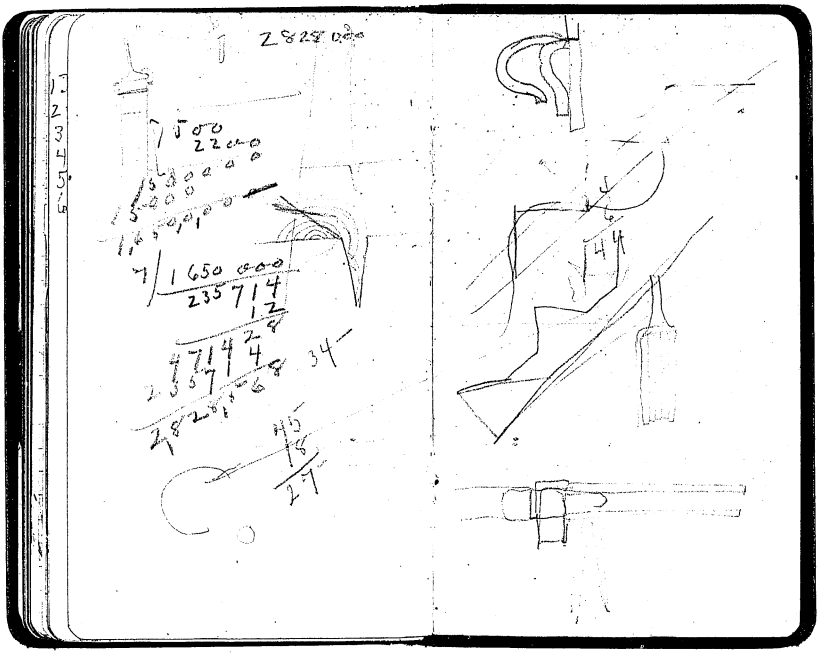
500 | 1000 | 125 | 87 5
500
2000
1500
500
1
4000
64
7000
2400
2400

87
4000
348

1 Towed Stone Sea Anchor
2 = Collision mats
3 Smoke bomb - Flare chute gun + Line gun
4 ~~Life~~ Life buoy
5 Oceanic Harbor
6 Mine sweeping Equipment






2825000
1500
2200
1650 000
235714
12
28
77144
235714
2825168
34
45
15
27
144

Notebook Series -- Pocket Notebooks
Notebook, PN-18-04-01

This pocket notebook, which covers the period April-August 1918, was used by Edison at Key West, Florida, and West Orange, New Jersey. Included are notes and drawings pertaining sound detection devices and other means of locating submarines, camouflaging techniques, torpedoes, and other war-related topics. Some of the notes, including data on the penetration of steel plates by machine guns at various ranges, were copied from published sources. There are occasional disparaging remarks by Edison in regard to the Navy Dept., its Annapolis-trained officer corps, and its aversion to risk taking, along with comments about the proposed Naval Research Laboratory, which Edison believed must be under civilian management. There is also criticism of Henry G. Wolfe, one of several experimenters loaned to Edison by the New York Edison Co.

Many of the entries made after Edison's return to West Orange in May refer to the production of disc records. Included are notes on varnishes, plating experiments, and the manufacture of record blanks. There are also notes on Lalande primary batteries, chalk telephones, and chemical experiments involving nickel, lithium, and bismuth. Beginning on page 167 is a series of entries with the title "gas war notes." Among the employees mentioned in the book are Charles T. Dally, John A. Hanley, Miller Reese Hutchison, and Sherwood T. (Sam) Moore. The front cover is stamped "Cash" and is marked "Jany to Sept 1918." A stamp on the flyleaf indicates that the book was purchased at Crain's Book Store in Key West. The book contains 174 numbered pages.

PN-18 [illegible]-01
E-1697

36

25

36
85
4
125

360
250
1000
1000
10

28.2

250 | 800
750
50

3.2

36
32
72

108
2
114

115
85
60
260

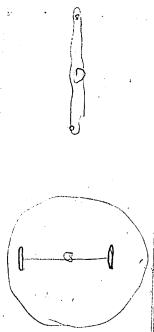
CRAIN'S BOOK STORE,
BOOKS, CIGARS, PIPES, STATIONERY,
POST CARDS,
CORNER 2ND ST.
KEY WEST, FLA.

2.6

April 1 1915

Possible noises on board

1 Engine
2 Circulating Pumps
3 Boiler Pump
4 Ventilating fans
5 Dynamos
6 Walking about
7 Water moving in boilers
8 Wireless
9 Projections from boat into water
10 Boat vibrates. Cable out + coiled
11 waves striking boat
12 Effects of screw on fish
13 Unwrapped stays. Vibrating
14 Bilge keel
15 perforated skin
16 Bow waves
17 Vibration of piping
18 Vibration of cable in water
19 Noise from Ocean



20- Rudder shaft loose on sheave

21 Intermittent stresses in shaft by Gravacks

22 Vacuum pumps

23 Chafing & dirt in the sea

24 water hammer in pipes

25 loose doors & windows

26 Handling Coal

Throw out of finish lowered in water at dock - pull grind bell used, got 350 ft with 3 stage audion

got 106 ft with old Self Vit bell without audion this is 12 times

NOTE Sensitive

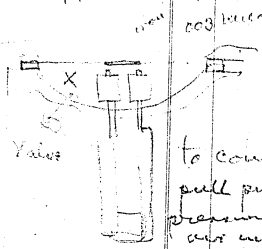
The same phone in
fresh water (waves
going thru wood
gives very good
results 165 ft —
with audion

The 50" funnel
5" mouth — 1" rubber
over holes dia
Listening with bad
tube, vacuum
around funnel
was not so loud
as [illegible] single
dia — 1"

The advantage of solid
rubber has for transforming
motion ~~from~~ of sound
waves from water to
air must be due to
fact it is a poor conductor
of heat & on the compression
gives cold & on
expansion gives heat
This prevents any loss
of Energy in the sound
waves. Hard Rubber
should be OK too.
think energy of sound
waves dissipated by a
metallic funnel.
Hard Rubber may be
very much better

or the multiple tubes
on funnel lined with
.008 of hard rubber
Vulcanized on & polished
Even soft rubber might
answer but think
hard is best
The very small surface
of multiple tubes as
compared to a funnel
for same deg of
Condensation is probably
reason former is
much better —

It may be non diaphram
should have a thin
Coat of hard rubber
.003 — or even soft,
Vulcanized on a Hard R
should not be Loaded with
muck
Thus dissipation of
heat in the waves
of sound may be the
Nuggets in the wood pile



Paint made with Cast
non heat conducting
paint. This substitutes
fine elasticity of the
air for poor elasticity
of graphite all of iron
and clamped at edges
for the loss and
Energy by low heat,
should work thus
double efficiency
of Conversion

It may be impracticable
to use this in fresh
but can be used
as an Accumulator
Reservoir —

The compressing bag
may have an initial
pressure to balance out
the magnetic pull &
then if limiting pins
used might be OK for
fish — especially if we
can control depth of
fish by telling out
or in Cable

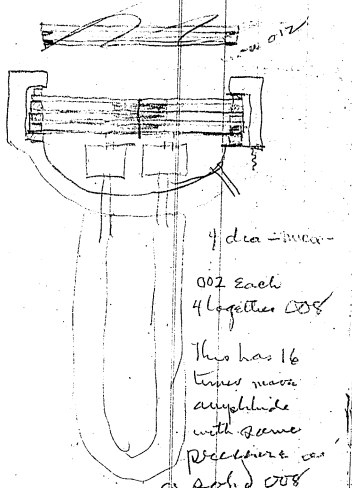
Experiment with wooden
dowel on shows &
also 1/4 & 1/8 holes
with this Rubber over plate
left legs showing
standard Bell thread
Rubber was half the
resistance 37½ ft to #25

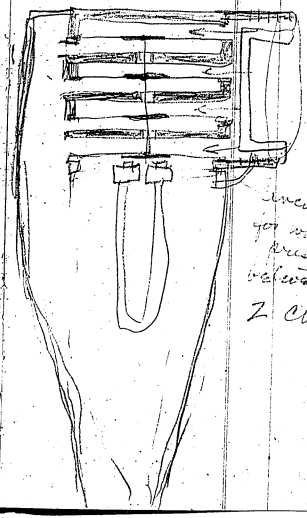
This is very favorable.

Musical notes of different pitches, are audible for distances varies inversely as the square root of the pitch

Speed of sound in pipes filled with water

Dia of tube	Thick of walls	Metres per sec
.720	032	998
.468	025	1046
.338	020.8	1164
.600	080	1213
.440	080	1281


4 dia - inner -
002 Each
4 together 008
This has 16
times more
amplitude
with same
pressure on
a solid 008


Circulation
for water
pressure
between the
2 Chambers

If underside of recording diaphram was a small closed chamber the amplitude is small as the elastic breath of small column not so very small (18) gives small amplitude without great compression – character of column of air so long say wave length of 128 per second. The elasticity is spread over long column & great amplitude is permitted to diaphram – It's like a breath of air one inch Rubber band or a 12 inch with same pull –

length of air column for little chorus should not be less than 36 inch

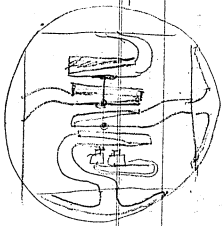
which corresponds to 128 second – lower notes will have diminished amplitude if air column is not made longer –

On other hand the compression side of chorus should be as small as possible to get greatest condensation + that is season chamber is necessary –

If no horn on recording lever will not follow the record if horn held over take it follow if funnel put on it follows it's exact reasonably one note jump precisely if hole in chamber enlarged for if plate on opposite side

it would allow
alternate but not so
loud —
Possibly very thin
leading cords be
made to record without
jump by longer pumps
or by controlled
Chamber on free side
this chamber adjustable

3" fish —



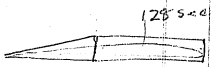
Each seperate —

In test — when running
shake cable above & below
water level or wind —

with 2" plate 1/8 hole
012 Rubber — along
phone 335 ft with
standard Beck as
against 700 ft
with phone receiver
sup. 1" 3/16 - Rubber on
& listening direct
~~Both~~ Used 3 stage
Audion 3/2 amp
& it is 4.3 times
less sensitive than
listening direct,
according to this
Mason tubes can
hear 2.15 times
further

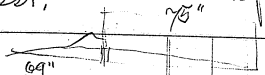
700 ft by direct listening
no phone was done
where very quiet whereas
the Experiment with phone
was very noisy
probably 400 ft
is proper distance
& therefore probably
phone is 3 times
less sensitive
instead of 4.3 times

It may be we have worked our formula wrongly ~~that~~ that
Here I showed for a full drawn candle 128 sec of strength
paper before lapse



Try it carefully

Best, 3" dia — 12 ft —



Our submarine at Key West under 50 ft water should be painted Matte black with 11% of Lamp head white to make invisible
1" black scant 1/8 white well blend at 800 feet

Continental Alphabet

		Changes letters	
—·—·	C	X	
··—·	F	X	
·———	J		
·—··	L	X	
———	O	X	
·——·	P	X	
——·—	Q		
·—·	R	X	
—··	X		
—·——	Y		
——··	Z		
·————	1		
··———	2		
···——	3		
····—	4		
·····	5		
—····	6		
——···	7		
———··	8		
————·	9		
—————	0		

unpopular

Nobody in Navy will do anything on account of the tricks that an innovation would bring in. If there was a Corresponding reward They would take tricks —

No training as that brings tricks —

Very poor records as no Corresponding rewards no trophies

No training at Annapolis to Cultivate the imagination no Theses for men to Exercise their imagination

Brocan having charge

Personnel utterly unexplained phraseology not used, no

Judgement of men no experience

No members of a selecting board should have any hold over - select board each year

Naval men should operate Civilians invent. + Civilian board get new things tested separately

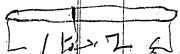
No strategy no regulation

Submarine on top make very large bow wave + white smoke 6 @ 8 times their length low down on water - tip of periscope about 3 ft below top of periscope

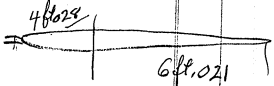
Bow wave has length from Bow to Conning tower, white. 2 ft high sea having some white caps -

Wooden mast 1" OD on side for taper

1 to 2



fish 10 ft



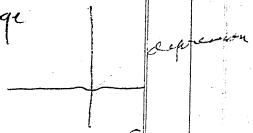
on a side -

This is proportion of Morris model -

Morris model at 9 knots shows not a trace of bow wave at junction of air & water, & no early & blind there is a slight depression

as water outside is a little higher than at.

Edge



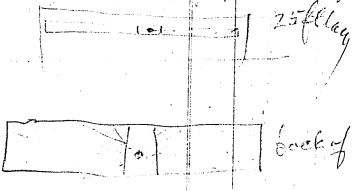
There is noise but only knocks which may come from boat, used stick & teeth there is a continuous sound but not great this also I think comes from boat

Boat is dinky from [illegible]

Has small flat aft wood

Also can make a
white sheet
under water
at night —

for ship light
Lamp in box 12" sq
25 ft long

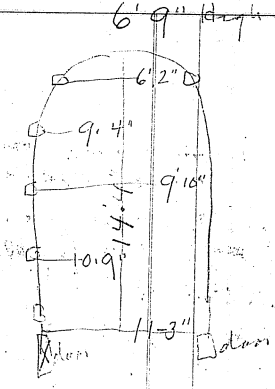


box white front of glass
or Celluloid so that only
to let Ultra Violet faint
thru — visible 1000 yds
when used during

is invisible —

Disc = Dry each section
with a Sulphuretting
Compound, also an
oxidizing Compound —
to Oxidize & Sulphurize

Dochom Bow Cabin.



Disc

Fusion by Soda Oxide
Tuning Energy Energy with
Reserves

Experiment with Magnesium
Carb, oxide, etc Coarse
ofine to get a binder
to obtain high % of
light reflection
for Camouflage

Disc = Try Experiments
with a crude Rubber
for Disc binders
burnt or oxidized

Use of sulphur
attack Nickel Silver
moulds if not
could use Sulphur
mixed with
residuum for
Disc —

Make a Varnish of
Linseed oil & litharge
with Liquor Varnish
& take to oxidize
oil then cut

Treat Linseed & also
Clean Wood oil
& get it at book 9.
Saw about Wood
oil —
Saponify & Distill
& Isolate the fatty
ingredient & Examine
oil not acted on
etc —

Saponify all the
residuum & the
precipitate & get
Soap —

Acc of Brotherhood

[illegible]
tied to [illegible]
& started

[illegible] on [illegible]
rolls, 66 [illegible]
instead [illegible]
[illegible] Collubon
a cheap Collubon
[illegible]
[illegible]
[illegible]
[illegible]

Disc [illegible] Cubon

[illegible] glass [illegible]

[illegible] oil may [illegible]
be made [illegible]
Bone black [illegible]
Chinese wood oil
for Magnesia white

16 holes 1/4 holes blow
9 [illegible] Mica [illegible] coal
thick, it would be safe
to work at the
[illegible] over
200 ft deep

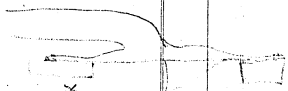
April 19 –

[illegible] different fresh blooms
[illegible]
[illegible]
family Cabinet
[illegible]
[illegible]
[illegible] Reason
Lasses to 42.

[illegible]
over [illegible]
[illegible] 1/8" [illegible]
[illegible] 42

1600 ohm head receiver
in air chamber with
Chamber at phenomenon
& enclosed in Rubber
Sheet around finch
1/8 holes, enclosed
[illegible]
H [illegible] 45

There is something wrong
with the collodio
Cuticoflagging paint
When boards nearly
disappear it looks
pale yellow. Exactly as
black smoke looks
when it turns out
+ gas dirty yellow shade



Mica 1/2 on X

Cardboard

It the board probably of impurities in lead. Try lengthening

Make 6 brands [illegible]

a reel sliding side lengthwise to adjust

Ela

The fish with dolphin [illegible] with body — the saw plane goes far more noise than plane cross ways of fish. This seems to prevent fish vibrates side wise and not longitudinally & to this effect vibration [illegible] causes noise. May have to have fin full length & [illegible]

#3 [illegible] to 20. on
60 years also [illegible]
[illegible]
[illegible]
perhaps [illegible]
[illegible]

[illegible]
other [illegible]
being [illegible]
[illegible] hands,

[illegible]
Brass tube with [illegible]
Rubber tube [illegible]
[illegible] round
[illegible] on
[illegible]
this [illegible] known
35, [illegible]
[illegible] BUT
[illegible] not
solid [illegible]
of course the

[illegible] was weak

so then was only
2 tiny [illegible]
[illegible]
and hollow wood
to not [illegible]
with one [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

which is very bad

The test [illegible]
has some value

Have it tested
at [illegible] with
[illegible]

Always [illegible]
[illegible]
[illegible]
[illegible]

Weigh it —

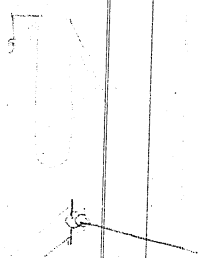
[illegible]

[illegible]

[illegible] 1 inch - [illegible] [illegible]
Rubber [illegible]
that I have at 10
but at 25 ft hear
to 12 - [illegible]
at 100 ft 24 to E
no East wind [illegible]
no [illegible] on account
of Rubber breaking
when the [illegible] to
boat [illegible]
[illegible] This is
a Doubt

Shows noise due
to boat leaves
dislodging cable
[illegible]
[illegible]
Cable on outrigger
hole —
nothing [illegible]
[illegible]
[illegible] sparked
fish probably

Struck bottom &
caught on rock —
Cement,
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]



Army book

Penetration of steel plates by machine gun

Range	Penetration
167 yds	.52
100 "	.4
200 "	.3
300 "	.21
400 "	.19
500	.1
600	.07
700	.04
800	.03
900	.02
1000	.000

Seems wrong

Columbia Record

formula

Shellac 30% + sometimes richer

Byrates (Pipeclay) 68%

Cotton black 2%

add Lampblack for color sometimes

add rotten stone instead of so large proportion of pipeclay

Calm - ideal
1050

300 ft -

Boat.

peri 3½ ft out.

No boat in sight
1057 — dittto 1107
1120 no boats in
sight - hear on phone
boat at 1125 - no
boat
on phone 8½ of total
is sub at 4 knots

1124

Near end of phone -

1130. about done on
phone. Cant count flow
surely — 1600 ft
limit -

Take lost 45
min -

45 min 385 ft min

385
45
925
540
1732 ft lost

5775 yards

2.88 miles
nautical

Running back
Qub. Walk deck
just at water line
or little lower

12 58 – aland
1800 ft gone –

4 boats in sight
Steamer 2 @ 300
yards in opposite
directions in
sight

19 mins on lines

lost, 2438 yards
1.215 miles nautical

1750) 2438 (1.38
1750
6880
5250
1630

Its a little
rough – white
caps – crowes
2 @ 2½ ft
Men rowing
on phone & like
women knocking
boat & coaches
groaning on
lines –

Phone broken
by the boat
Hulch 1 see Hudy or
Nutt 1 3 5 140

I think Bell dia
makes perhaps 50
vibrations of touched
once & condition brings
them out & that
knocks is cause
of big noise
put upright &
damper by shot
or 20 mesh stuff
all over

Submarine - moving up & down
and a listening station
for actual tracking of
listeners ? find out what
is really necessary

Blue Prints prepared need
200 ft boat,
test all the 9 subs

Hutchison resigned
Hanley - Meeting Fuller
first night after filling
back up gas meet
Fuller at Engineering
Club - Rice Fuller +
attend subs only 300 yds

away.

Very limit when no results
head —

Big diaphragm when
quiet (idea) & when
little puff off
Montauk Point —

1 Depth bomb, mined —
vertical shaft —
360 ft away liable
to be closed if need boats
have lower speed
than 22 knots —
bulges in plates
of destroyer,

Complicated tube
system no doubt
2 way tubes ok
+ be very much
improved —

If new tube be built
must be safely under
Civilian Sec'y &
Civilian Manager
as protection of
Navy against
turning over the
operation of his
plant

Board not unanimous
Inter Commission

Standing still

With perfect conditions

5.775 yards is limit
listening in calm water
and boats in sight

With white caps off Montauk
moderately rough but
considered a clean good
sea scarcely any
rolling or pitching

2438 yards limit
or two-masts fog in sight
Listener varied
18% higher Successive
of Ear three 6 other
mic
Sub 3.85 Knots hour

only Coming towards approaches

Checked by Turning
Revolutions of Engineer

Telephone listener -
Tow in sight Hecla -
listened at 100
Rev White Hawley
at 135 @ 140
Showing that Hecla
headed Tug & not
sub Whereas Hawley
Evidently did not
hear ~~[illegible]~~ tow

Disc tried mix of Gilsonite
& Rosin with Red lead
hardened much raised
up — Couldnt scratch
PROMISING —
Gt. Gilsonite alone
Rosin not reservoir
P60 not well mixed (thick
it adequate a little
Coal tar & Gravel
dirt — Clogging
later — I find the
66% Residue from
distilling Gilsonite
dont scratch with

finger nail — This
along wallant
P60 — after remelting

think we shall have
to heat and moulds
just below the stick to
point to prevent
Chilling

Elaïdin,

1 cc Hg dissolved 12 cc Cold Nitric
1.42 Sp gr
2 cc of deep green red
then shaken in a corked
graduated bottle with
50 cc of oil repeated
every 10 min for 2 hours
gives a solid product
some soft, hard, &
some resin bottle
Olive in 24 hours it
sounds when shaken
very firm

in making Elaidin turns in
Element

Solid hard heavier quantity
Olive, Almond, Earth nut,
hard, Sperm,
all other oils softer

Resinate Soaps

100 pts Rosin – 33 pts Soda
Crystals 1000 pts water
boil for hours cool down to
50 C by addition of
1000 pts water
Can add drops Soda to
make Resinate

Anilene Hydrochloride

Hardens & makes Rosin less brittle stands a lot —

A surprisingly small amount of aniline acid make rosin so it cuts of Carpet Rosin hardens & then usually it will be good

Rosin just melted in small Casserole on hot plate & some ~~Boiled~~ hydrated Ferric Chl turns black & melting Point goes up — not so brittle PROMISING Reaction

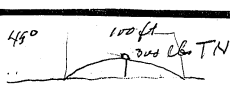
Wheel 30"

Total width	TNT Weight lbs
6"	180
10	323
18	613

Dont forget the Cruciable steel Zig Zag protector

Soak Rosin in Clean till dont run + dry it -

Try Reg K_2NO_3 + Charcoal no S with 1/4 of China Clay - also Rosin



This will move Trench this -

85 KNO_3 15 200 mesh charcoal no residue quick good smoke

ditto $NaNO_3$ 1/4 gram residue slower smoke not quite so good

think K OK for bomb

lbs TNT	Length Trench Carried
50	55
100	69
200	87
300	100
400	110
500	118

Very good Dusker powder
90 KNO_3
15.8 200 mesh Charcoal
25 Sulphur Caust Soda
probably Explode when Confined —
possibly should be
12 of Charcoal to
get rid of a little
Residue left —

Paraphenylenediamine is readily obtained by heating p-dichlorobenzene, Ammonia 25%, & Copper Sulfate for 20 hours at 170 @ 180 & finally at 200 C
Actiengesellschaft fur Anilin Fabrik D R P 202170
P ulmt 9 gms
W2 ~~Thorse~~ P.D. chl Benzol

(Fine)
Tetrachloronaphthalene & ~~Bromine~~ Resinate
in proper proportions looks & acts like shellac. Cheap. Shaving dust Resistant.

of the 3 or 4 Resinates

with Iodine Prep

Reg Varnish Pb resinate

best no bubbles clear

Solubility no gas

P. Ib like shellac

For Tough Celluloid like

Manilla Copal +

Tetranap - like

lead bends - is

hard

Try Iodizing surface

of Copper Wood & Glass

Increase to see if separates

Try Iodine in Alcohol

& also other solvents

see how this can get

it & if stays OK

~~Use~~ Use Chloroform

Bismuth hydroxide can be made

to have various opacities

Try also Bi ~~salt~~ Compounds

See if Tribromophenol is

plastic, also phosphomolybdate

of ammonia

Iodine in Ether for Lodizing Copper Cathodes

ditto Vapor of iodine.

Black Copper Cathode with Fe then reduced then plate with Nickel

Dip Cathodes in Varnish dissolved in Ether, Amylacetate Chloroform etc / graphite plate.

Vulcanize Sulphur on Cathode ditto plates

Plate by High M.P. Carbon instead of phenol Resin

Mix Phenol Resin + add The Chrome Clay

ditto dissolve in alcohol mix & dry work on Roll

Esters Vital fumes in air, fume phosphorescent.

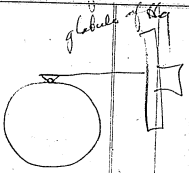
Dithiocarbonic Esters of type $OR \cdot CS \cdot SR$ + Thiocarbamic Esters of type $NR_2 \cdot CS \cdot OR$ fume in air at ordinary temperature Emitting vapors which appear luminous in the dark.

The Ester $CS(OMe)_2$ also its oxidation.

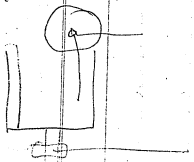
Chem Soc Jnl 98 1910 p 295

Distill Wood Tar, they are supposed to be Aldehyde Resins

Check below



or amalgamated Hg globule so it sticks



Also

Rotate the magnet, one pole brushed to phone

Ether
Rosin Sol for
copper needle dip
for graphite

10 cc Ether 1/2 gram
5 grms Rosenita
100 cc Ether

Try Chemx Clay
Salts that easily melt in
water of Crystallization
by heat on cooling water
should be steam bath
& Cement Chalk
together.

Produce lamp black by putting it in Oleum & then neutralizing

Hard Pitch (Coal tar) 60 pts
57 China clay 3 pts
fairly hard to Varnish
hard to Cent,
Promising

Brachman plate a strip of steel with Nickel – [illegible] in 24 hrs
[illegible] rapid [illegible]
[illegible] —

Cumerone Resin + China Clay for moulding
manufacturing purposes for
Storage Battery

Kerosene BP 200 @ 250
with its own Vol of formalin
& 0.75 time its Vol of
[illegible] 80% get solid Condensation
products [illegible]
[illegible] products [illegible] Weight

Use 5% Para in plain Varnish (Extra)

no lampblack or Sandrac, but
with 1/3 more 6/4 & 1/3rd more

1 Add, a little ammonia acetate
✓2 = Reduced Nickel,
✓3 Chloride ammonia
4 Pass HCl thru Varnish
5 Cupric chloride
✓6 Chloride Tin.
7 other chlorides salts Varnish
8 Acetic glacial
9 Arsenic
✓10 Benzidine
✓11 Bichromate potash
12 H_2SO_4
13 Nickel chloride
14 Pyridine
15 Thiopen
16 Nitrobenzol
17 Residue from Phenol still
18 Benzoic sulfonic acid
19 Bisulfide Carbon

20 Zinc Chloride -
21 Nitrobenzene
22 paranitrophenol
23 Bromine or tribromophenol
24 Naphthalene
25 Naphthylamine
26 Tolidin A + B
27 a Sulfate.
28 Orthophenylendiamin
29 Metaphenylendiamin
30 Iron oxide ferric -
31 FeCl -
32 Pb Resinate — Peroxide lead, quicklime

If possible a catalyst like we had of 5% para would work
long time it would make
a pure varnish

Must get to attach piece of
Copper to Iron and see if
dont burn with darkness
of Oil – also of Copper
Connector has anything
to do with it
Also try Metallic cement –

38.34 %
3.6
.398
3.95
53.68

Best smoke

90 grms. KNO_3
16 grms Charcoal
20 grams Na_2CO_3

71.43 KNO_3
12.70 Charcoal
15.8 Carb Soda Calcy
99.93

Rapid fire Normal Experts

100 grms Chlorid Potash 12.6 [illegible]
9.4 Chlorid
1 para
10.4 6/4
140 Dilute alcohol
6% Para Continues [illegible]
1½ hours 137.7 [illegible]

25 90 KNO_3 16 char 20 $NaHSO_3$
Pretty good no residue
fairly quick

26 90 KNO_3 16 char 20 KCl
more smoke than 25 no
residue fairly quick

27 90 KNO_3 16 char 20 NaH_2PO_2
Little less smoke than 26
Explosive quick - no residue

28 90 $NaNO_3$ 16 char
20 $NaHSO_3$ -
Very slow poor smoke
had residue

29 90 $NaNO_3$ 16 char
20 KCl good smoke
slow — [illegible]

30 — $NaNO_3$ 16 charcoal
20 $NaH_2PO_4 \cdot H_2O$
good smoke slow
a little residue

Reg Varnish 1/3 more
6% + 6% parts of the
Resin 28 cc of
Varnish 1 cc of
glacial acetic
Condensed in 25
minutes 135 [illegible]
[illegible]

Det of ¼ p unloaded

Pierra for accelerator.

600 ft X-XX-	1600 ft
500	1732
400	1832
300	1908
200	1960

100 ℔ Resin 14.5 free ℔

7.5 - Phenol

1 Para

1 Sandrac

7.8 6/4

140 oil

5 Lampblack

3 Ochre

7.15 Vis

47% solid

of solid 47% 85% as Condensate

Both Mg & Mn Resinates
dissolved in hot rosin —

Melting point Can be
raised to any Extent
by Manufacture Resinate

Alumina Res — not
Salt Melted Rosin —

Mn Resinate dissolved
till it sets in Rosin
Hard + OK Thick
well not cut

High softening point
OK — Fe Hydrox
in Melted Rosin

Di acetate Mn OK

Kalum 24 water loses 10 at 100 C
at 120 C 10 more +
the balance of 4 when
brought to 200 cent

Tetrametaphosphate of lead
$Pb_2 P_4 O_{12}$ formed by heating
Oxide lead + glacial phosphoric
at 300 — ~~Decomposes by~~
~~Sodium Sulphide~~ by
decomposing it with
Sodium Sulphide to get
the Sodium Salt. — Is not
a crystalline salt but forms
with a small quantity of
water a Viscid Elastic Mass
+ more water makes it
gummy which contains
a Jelly

The tetramethylphosphitate of
Alkalies Metals precipitates
Yield precipitates with
Sol salts of Alkaline
Earths —

Acid Sachrate of Lime
Melts & is then Hydrogenated

Also make Caramel at
working different temp
from Cane Sugar & Glucose

Sodium Peroxide hydrochloride
$Na_2O_2 \cdot 2HCl$ — pass dry HCl into a
suspension of Sodium Perox in
Carbon tetrachloride until recovery
gain of weight is allowed — Collect
& dry product (forms Chlorides
peroxides, readily sol in water
Contain 10% available oxygen
G20 from Jaubert DRP
229572 — Chem abstracts
1911 — 489

Dry glue in fused alum
Melts Caramel at 160
Silicate Soda

2 Rosin 1 Sulphur

11 slaked lime, Resinous mass

Distill Rosin down

1/4 1/3 & 1/2

see if residue better than Reg rosin -

ditto (wood) tar pitch

Liquid glue 100 glue 110 water 40 Molasses 35° Baume

10 @ 20 lbs Pot Carbonate

4 @ 8 lbs Ammonia Borate

100 lbs water, on heating a glassy mass is formed

Galalith -

dis Casein in soda Carbonate filter then precipitate by acid dry around - then its treated with formaldehyde - is horn like material like celluloid

Dry Tragacanth with Chemically Aqua Aqua - Ø

Print Aluminum Record in
Powder Exposure for dif
lengths of time to air of
then graphitize & test
surface &
also without graphitizing
dif lengths of time Exposed
to air

Make some Varnish in
little bulb with 90
85 80% alcohol up
to Limit varnish would
dissolve - using the
% of alcohol the dissolves
leaving Exposed

Use brush on metal
blank then graphitize
& print record of
do all the tests
varnish with & without
Varnish drop tests
Etc

Took 30 alcohol 25
placed Resin - 2.50 grms 6/4
Paris - 1.25
Dissolved all - then
added 7 grms water
~~to all bulbs~~ Didnt precipitate
any - went to clear varnish
this makes 75% alcohol
strength - added after hour

7 grms mercuric chlorid
dissolved in some
but it had got thick

The first lot with 7
grms water & added
5 drops HCl &
Condensed at 135° F. for
in 5 minutes —

Osmorion, Use a
Manometer single shell
Hg Condenser to turn
the Dorsal Check Phones
for amplifying —

Make pneumatic Corks

by using hardened
rubber or a clay or
other resin. Then immerse
in Chl Sulphur in a
Solvent
bath to get vulcanize
make them —

Try Blanc Fix for
Chalk Mélanographe —
Treat in everything
acids & Cl
& everything resolve in
KOH or alkalies

ditto Lithoptione

Platinum stone.
Fr Kerrsdyne

With Blanc fix
Try all kinds of
Solutions —

Try KOH.
also Oxides not in the alkalis
green Co Ba. Sr Fe Ni Mn Cr Cu Cd
also Hydrogen [illegible]

1:1 % alcohol
Zinc 150 Room 3 ess China
Clay 15 flock Sequot
~~Pb~~ [illegible]
Little [illegible] Tile Ismalli
about [illegible]
Vice versa
[illegible]

Would try hydrogen
then dehydrate the carbonates

Dont forget to make
acid Chlorides as Tungstic
worked with acids —
Try Antimonic acid Tungstic
Metastanic Uranic
other solid acids Zirconic
Silicic —

Think there are numerous
organic substances for
Chalks on EMG not
attacked by KOH.

Phosphate Lithium for chalk
use Scott,

precipitated K or Na salts
for electric or Kathode
test then attack or dissolve

Inorganic lime percolate is as
usual as Agl.
[illegible] from the gelatin with
[illegible] amount of [illegible]
in [illegible] Sol.

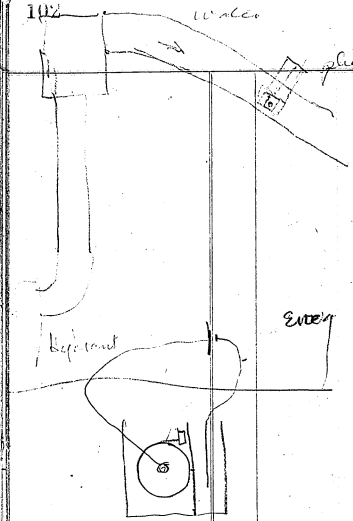
Ammonium Magnesium

Phosphate [illegible]
percolate usual [illegible]
for Ethric [illegible]

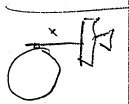
Lenses make 2" dia
1½ lens Meas or 1/4 kolo
plate - Chamber thin at
extra dia over reg
The metallic chamber shown
by lined with Meas
Put only & Celluloid to
dummy position -

Ammonium Zinc Phosphate

precipitate Uranate K or Na
for electric - not applicable
K



deposits a metal or an oxide
which gives friction telephone
perhaps a stat be better



Amalgamate top of
X tube sensitive dia
also drop of Hg perhaps
HgO is made reduced
gives friction be very
sensitive - perhaps
amalgam work

Try Baking Chalk
& use of hydroxide bubbles
baked & not baked

Rundgum Quoted by Ralph
Foster Co Reg
100 mesh 35 Ton
150 " 40 "
200 " 45 "
no reason to order less than ton lots
Brass 2½ dia nickelplate —

With Chalk Rocks use
diaphram ½ dia also
1 3/16 very thick —

I think my vacuum
inside out. Base hogs
with a Vacuum dented
over while doing work
Lumpblock that

the scratch lyons can
be eliminated, on
very fine velvet,

Try Experiment Al Wolff
dip white wax in
Iodine in water
then in Nitrate
Silver then in
formaldehyde to
produce a clear
also Iodine Vapor
Use of formaldehyde
may not be necessary
in plating Cath wills
do not deposit direct
reducing the silver

L. C. H.

Do away with Graphite

1st Immerse in Iodine then immerse in Nitrate Silver, then reduce by Current, - also try in Vapor of I

2 Add Glycerole of Silver to our record work of the current - decomposing then when in plating Current would deoxidize it & give Silver Surface. Perhaps Chl. Silver will dissolve or melt into wax or some fat of silver

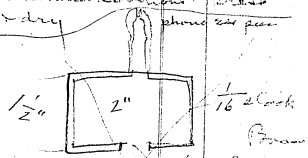
Dissolve a Silver salt in a liquid which costs, precondensing wax without decomposing it, immerse record & take out dry leaving a film. Then reduce by formaldehyde

Glass - must be coated with

Pum -

Escape Reg No, filter - to Much add [illegible] Sul Sulfate [illegible] Then [illegible] Sol by hydrochloric gas to [illegible] Cake then dry -

Or forming about separation with saturated solution of [illegible] dry



[illegible] 2" [illegible] Echoes
[illegible] 3 [illegible] Reverberations
[illegible] 5
[illegible] 8" hole
All Wrap

Then when get back' 92

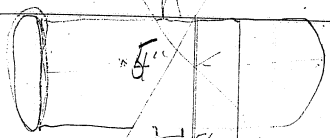
make another & insert them
into the Oldhamo tube
at Andover to see how
much further you go on lower

Use recording phone
Drop on 2" disk record
then do same thing
& Record thru the
3 foot Triangle to see
if double the vibration
& Duplicate data.

Wooden cap of Hand Arm
arrange the tool with
Dia Anchors make it

Make one

Raghadam
Earpiece



Phone for Mr Lowe come and
with his new and old microphone
only mics wanted

Have mics make
all in one case
4 to 1 leverage

See wooden Model
of Boroscopic holder

Xylen to 5 Sulfur dup

Methods on Corner Mark

4 Week off –

Try 2 fewer drops of m Methylen

Liquid Organics 1.5 to 1.99

Acetylene tetrachloride	1.58
Ethyl Iodide	1.82
Benzenehexachloride	1.87
Benzoyl Br	1.54
Benzoyl Iodide	1.73
Bromobenzene C_6H_5Br	1.499
Bromoethylene	1.51
Carbon hexachloride C_2Cl_6	1.99
Carbon tetrachloride	1.6
Chloral	1.51

Colored on Lab Note p 1 on active

Acetylene tetrabromide	2.97
Bromal CBr_3COH	3.34
Bromoform $CHBr_3$	2.88
Carbon Tetrabromide CBr_4	3.42
Carbon tetraiodide	4.32
Para-Dibromobenzene	2.22
Ethylene bromide	2.19
" Iodide	2.07
Ethylidene Br	2.100
" Iodide	2.87
Hexachlorobenzene C_6Cl_6	2.04
Iodoform	4.05
Mercuric Cyanide	4.00
Methyl Iodide	2.28
Methylene bromide	2.49
" Iodide	3.33
Tribromobenzene	3.02
" Ethylene	2.97
Bromoethylene Cl	3.61
Methylene Iodide	3.33

for quarter of little granule
Cup - use Union Cork

Vaughn + brass 1/8"

Jelinek Carbon
1/2 Potassium Chlorate
1/2 [illegible] Syrup
Molasses [illegible] Stick
[illegible]

Baker & Adamson Co.
Glue at one [illegible]
Woodbrown [illegible] of Nickel Stick.
Brownstone [illegible] 134 & Coat

Both Aluminum & Magnesium
is coated with an oxide
& yet make contact
Nickel also make same
granules Will Melt
[illegible] & Liquid L
make 6 9 same &
test

look up Coherers in 113
Wordsworth Graphite & get
points on action of
dif particles

Try [illegible]
in Micro,
Try Tellurium,
Large flake graphite

Try plain iron diaphragm
pass current through it
& talk. Microphone - Jackson
[illegible]

Put carbon balls in
Rubber & dry make a clear

Make 1/6 thick dispersion of salt granules cinchonate w/ metal) salt spray then pour hot Recording Lecture. When pass Current + Cell Lesson solution, ~~[illegible]~~ ~~put together [illegible]~~ Recipulin on

Hard Rubber Dish + [illegible] Cinchonation - average so one end [illegible] on Compression side + other pole on [illegible] side

Tin has a cry when bent possibly Rep. [illegible] make tin disc

Make Chalk with large 1/6 Na_2O oxide

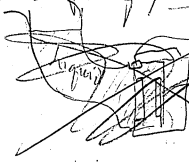
with Sulphate ~~[illegible]~~ Barium (Blanc fix) Chalk can use fused of KOH, all kinds of acid. Neutral or Alkaline Salt solutions —

Make many of them + dont want a displacement sol like $CaCl_2$ $LiCl$ $NaCl$ Borax Etc

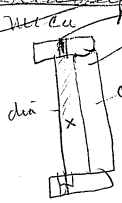
When get best liquid for micro - try cup 1/2 full —

also Cup with finest granules + another with Coarser

~~Heat some picked anthracite Red hot in box filled with charcoal then crush & get all dif sizes to try~~



~~Make a Cast of the Electrode on Mica~~



x pound full granules dumped & then pound full of Sand Molten shellac test on Quadrant

New scheme for Discs

Use Rotten stone & black to get stiff ~~pug~~ dough in Mixer – Put whole pug (squeezing out as much air as can)

Into a Mould the right size for small test discs, press it slightly (Cold) Then take dust and advance plunger to equal proper length for a disc, then use a moving wire or circular saw running p.o. first Cut off first two dough outer pieces, then use a ring or saw to cut off the disc. Dry in Vacuum at low temp as possible – then Varnish, bake & print

see other side

Dry Clay also – experimentally might use Porcelain saw & Cleaner & shaker & could press a cylinder given to which a rotating

Use Wax, shellac, Rubber or

Put carbon granules in a mould (Lampblack (best)) ~~pack~~ Even full then pour the Melted wax, shellac use or if Rubber use Benzol solution of Rubber

This makes a solid disk say

Put Microphone sizes or Diaphragm sizes lay on a block with another on top well I call & talk to it

Note to Bachman about not satisfied some tubes not being larger than others if you have allowed your desire to keep the cell electrical metal & help Wickel to burst

Tell Charlie he should attend to having Wooden Tool that is impossible to prevent some

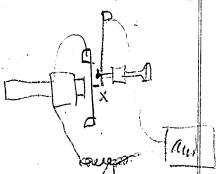
tubes opening up & that was always had them but never to anything of cells as the Metal gets hardened after 2nd Change, and steel bars is not a ~~[illegible]~~ necessity get them to Lenkmann then or you will get in BAD for reason than things not explained

In tests at Garage use 4 ft tubes 2 with stethoscope tubes & get the limit of distance with sub direct hearing

Think the peg of Rillow & the block the method of moulding & baking

Could be spun on glass plate rotated like potters wheel providing it could be shaped off — see Book on Pottery see how they do it — we might have to use some dim funnel

Skillen stone for fine stop stocking. This would prevent make EK



Self for talk to phone to Pompeii

Powdery Carbon points,

~~Hence — use~~

~~in~~ heaviest liquid input

Carborundum granules in phone its more sensitive for work than heavy Carbonds

Gases used in Lo. etc.
Steel (fine) + Silicon
Tellurium + Aluminum

Carbon of silicon
Selenium & Molybdenum & oppo
good & iron gives
best resistivity of Carborundum is

Zincite & Chalcopyrite
Zincite forms an element unusual
all good semiconductors are not
Cinnabar powder using must have
Crystal

Granules for Mange

Make some French
Precip Tungstate
dissolve at 1 pints
powder & incorporate
in 1 Condensate &
Carbons.
Phone Keith Greenlees
Tungstate Lead
Uranate hair on Sacks

Multiply by 9
divide by 5
add 32 —
C & F rule

Ask Emery what he pays for
Oil used with Diesel — of
Experiments have tests made
with Straw Oil ?

Balsh of Coulsonde
I am hoping Carbonyx
at Long Lake —
Marked # 1135 Mats
Cured under pressure

New Disk Thin Clay
2.37 grams pot per
1/1000 Inch
Weight of 1st Disc
0.23 grams average
Calliper 263

300 China Clay
120 Rosin 11% Shaw oil
28.8 flock — or 24% of wt of Rosin
115 cc Solvent Naphtha

above in
~~Also~~ formula for 1st Sample
disc made.

The blank powder not evenly loaded in mould hence high in Center showing great shrinkage — light color around outer part (can see very hard general surface — Vaporize dried to quench in ocean — bubbles
Stood 10 drops on 6 in Tar 1 ft high
1 drop 2 ft a bubble — two on 2nd
drop — Also in GK
Powder. Shrink 30 weeks from
Vermicelli like 11 mm, dried in
Vac 200 Torr

Infusible Condensate.

110 D2 Nat Oil
100 Rosin
15 6/4 — do show one 4% Pero

Get some ~~Cryolite~~ Amorphous WVa "
California White Meerschaum
~~Allegheny stone~~ Pipe Clay
ware, + other Mineral
porous stones, Lava Gulf
Cylinder South Dismond
test plain + [illegible] with
powders some [illegible] much
of Clay fine stuff [illegible]
refill Rosin + [illegible]
[illegible] or [illegible]

Tell Woore about spring (10) last
motion in link — should be
steel wire pressed in or
Double Continuous wire back
loop wont do —

See what is ~~[illegible]~~ larger of ~~our~~ smallest Mixer —

1 Get supply of flock —
[illegible] much best
2 China Clay wet hard —
by Can get Mortar —
3 Try using best American Chum
[illegible]
4 Fig up for 25 discs per day
10 Hours —
5 = Workout Creasing machine
to 30 mark
6 Fence loading —
7 Varnish & Gold Lettering
8 = Neat & Cold Letters —

for Loading Dolly also might be
Good idea ~~[illegible]~~ the consider
Only using 1 bags in one blank
another bags in other — regulating
flower returning to Dough to
his need again —

New Mixer record pressure
use these for Dolly discs
only —

for Edging, see if hot tool
will stamp it or cut it or
hot tool pressure and fold
left then follow with
Turning tool —

Get some Tea or dung or
and ~~add~~ use of Nitrate
Ag or Chloride strong mg
Salt will do also —
also try [illegible]

or if 6/4 or other absorber of Iodine will dissolve Ag
power bottom + see if it will deposit iodide Ag from a Silver Salt.

Electrode of silver may dissolve

Have Dummy Silver in discarded Wax mould & plate it, using formaldehyde
Glass salvaging section
Iodine 6/4 for silver
Water will dry it
So no alcohol in the 40%
Formalin to dissolve wax

Perhaps Iodide of Ag dissolves in Cl. compounds
a [illegible] of [illegible] wax away

Add 5 Wax [illegible] drops of plus [illegible] of [illegible]

for absorbing the Iodine

Try 2 Amps in Multiple & also series

Try one Amp with amplifying lever

IMPORTANT

Possibly the very old nickel books say Bismuth & Iron
Overall Cell as great Iron — Now Iron goes bad with Bi hence in body Cells Iron dry + it kills
improvement by Bi —
Should have very much more Iron (10) same proportion as in small test cell

Make 2 A4 — 6 @ + 3 d
tubes 10/-8. 12 Ni'

get some Barite or Nature
Sulphate Barium. + Cut
Enough Chalk from many
Chalks to precipitate
in form also good
Quantity with which of
dif precipitate by in
bunch

Try getting Enough
Cylinder from
Crystals - Alum
etc heavy wanted
Crystalizing

Try Water glass + the
powder mix in pug mill
& print & put in CO_2 gas
to harden.

90% Litharge 10% glycol
sets quickly as a cement
Try - glycerine will do but
glycol better harden in
1 or 2 hours.

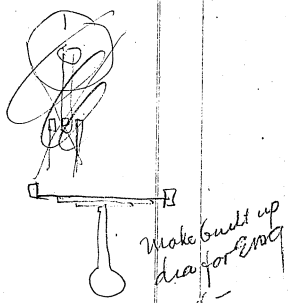
Try in Sol Napt Rosin -
Some Rubber - see what it
does to, perhaps it will
take place of Drawing oil to
great advantage

Make some Carb Granules
moistened with 20%
~~Sol~~ KOH, ~~bake~~ bake them
at 212,

Dry Steatite, Zinc Blende, Hook & white – Electric Calamine
slate, Serpentine, Magnetite

Sr CO_3 moistened Silicate Soda
pressed & put in CO_2 hot 212

Req Sr CO_3 highest possible pressure
wet with 20% KOH, then baked



Roll out Dalleys dough for drying
see of practical

A 4 Cap 180
Sig Bat 22.5

A-4 – 1370 cc 90 grm LiOH
Sig Cell 243 12 "

A.4 7.61 cc per amp
Sig 10.8 cc "

A4 2 LiOH per amp
Sig 1.87 "

July 29 1918.

Dimroldin just received a 606 of New Dso blank work
Clay Resin - Straw pitch - Lampblack
purged in mixer, boiled up just
between 2 pieces paraffin paper
& put in hydraulic press 90 lb sq in
squirts very fine with homogeneous
stained dry faces strips from
at Easily - Made 10 dozen
from 1 piece of paper no
injury to paper —

Can use NiOH. finer loadings
" ½ the LiOH. @ 66% of Reg

Steel poor drawing steel,
More separating pins
15% KOH.
Load more flake per pump
" ½ the flake make more in
between flakes.
Tamp falls too far
" to heavy
Rings on too tight
— by hand.
Investigate Lithia scales
measuring + precision - is Li tested
Is there enough room for larger
pin paper alone,
Does NiOH prevent 20 mesh
silk screen colour it should
be,
Load tubes for a few cells
Were 40 on 180 & some
Were 20 on 180
all were 50 —

Bromide of lead cylinder
Emf — Phlbr not affected by
KOH.

Platin Platinum Tray

Refill 25% Li OH.
A4 =

good cell. giving results

L 30 — 3 grids 10 inches
to grid — 3/16 —

Heat fresh precip Bismuth
hydroxide in KOH allow
to settle — pour off —
find a salt which in
small quantity dissolved
in KOH will precipitate
the Bi dissolved

A4 10% Bi in Ni
use sheet of perforated
zinc test cell to keep Bi
from attacking the Iron
when reduced

Want to find something
that keeps Bi OH from
dissolving in KOH —

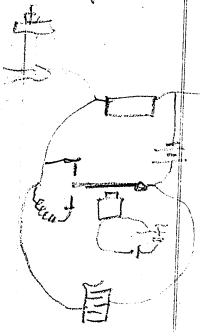
try Bi 10% in Ni — A4
with 2 iron to each
plate — heavily
overcharge to get whole
of iron active to get
full Bi capacity of
each plate probably
only 2 Ni plates
to 18 Zi —

Small Jet Impulse
Bowman Engine with
Cooper Condenser
for Gasoline by
Howell — B
Marked

Of Light Scale was fired off
weighed out 10 grams
While supposed to have
½ liters went to
11.827 — I added it —
wt 9.325.
Extreme Vacuum of
2.499 grams
23 0/0

Miller Can make Rubber
21 X 21 — 2" thick or
less — $2 lb —

Phonoplex



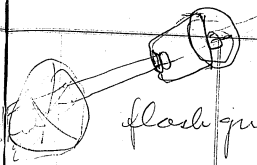
Dec of Sur 3/4 Tubes are

1½ Spurred —

get some NaHypochlorite
that chlorates with

Chl K etc with an
Apple chuck also
Chlorates of Metals —

8-13- slippery
Dope for Nickel



flash guard

also bellow of grafite of
Compressed hemp black Gases of
shell gases distribute l
or at Edge.

get Hoffman make up
right proportion of his
mixt, test our way of
mixing.

~~Off fred out of mixer~~
want worm & wiper
arm is far from bottom

125 wood
95 Chalk
26 gms Rosin 10.4%

Rosin solution has been
titrated with 1 pt Nitric
2 washes in soda
washes

Asphalt dissolves

See how much HCl can
be put in our Varnish
holding it to Pour
possibly Twenty Cake
Care of the Chlorine
Prevent gas,

Treat Nitrate with
Dimethylglyoxime first in
Cell

See fred Off of wz
have Palladium gens
in Chalk phone
if not use them

A small heap of finely divided Chlorate of K supported on a filter Paper on a tripod is saturated with a solution of Phosphorus in Carbon Bisulphide as soon as latter Evaporates the Mass Explodes with loud report & Clouds of smoke

L. Oth make Gallovdal Stannic acid, Ferric oxide Chromic ox

Drains ~~smoke up~~

Organic salts Internally based & Mike Cylinder / diffs Manganic salts

Monahan

Should get some steel with a little lower Carbon & try — They should not Crack which not annealed.

Also seam only 2/3rds weyin — also best test is bars without annealing —

~~#5710 Basketball Fr~~
~~Telephone Hazel 2176~~
~~Hazel 2176~~

~~Write Deane to rig up a blower + heater + blow Kingsbury Wren 3" pipe 10 ft long also other provisions also blow air thru Chrum 20% of pots get some 60% —~~

~~Design the Cargo bow spent to swing up so hatches can be put on on board~~

Chalk blank

120 Rosin
24% of Rosin in flock
300 Chalk

Equals 120 lbs Rosin
28.8 lbs flock
300 lbs Chalk

Rosin	6.00	50c	16
flock	2.88	10c	1
Chalk	3.00	10c	1
	11.88		

400 blanks 2.97

Use of Ammoniacal

Acetate of Lead

$(AcO)_2Pb$

will precip. mercury from water & make it insol. — vide ~~[illegible]~~ also 10 Chlorine Calorimet. (for Dise)

Mining —

1st Acid in goes down chalk

Sulphuryl Chloride BP 151 Sp 1.7

Prepd. usual SO_3 + PCl$_5$ acetic stirred Combine. SO_2Cl_2 using no OH well not act with water or fume in air SO_3 + free SO_2

Soak Cu Plate in Hyposulphite work

Manganese hyposulphide + Dry above

2nd Soak + precipitate Manganese hydrox in CuO plate

3rd Precip 2/3 Cu hydrox with 1/3 Manganese hydrox + oxidize — + heat.

Soak Manganous Sulphide in CuO plate to Dry add lead weakest Sulfide Oxidizes Rapidly in air

Try Manganous Borate in CuO plate

Manganates

Manganese hypoxyde

Bolwedel P 200 Mn get the Wad Combination + Heat

Chloride either Sp. Gravity or alcohol alone
either its used of alkali metal
chloride not being out

Calcium Manganite $CaMnO_3$
also other Manganites - might be
good O Electrodes a mixt in
NaOH or KOH make them
all chlorate mixt.
$CuMnO_3$

Load a 1 inch tube with
flake of black ox manganese
stance on NaOH & put against
Zinc in Sal ammoniac, the
MnO_2 is a conductor & may
not polarize with such
dense conductor as manganese
lay Ni flakes
& thank the whole
trouble with electrodes cells
is poor conducting of the
peroxide which is cured
by the flakes & we can get
heavy currents

Lelande

Dark CuO plate in Permanganate K & heat. Tol dissolves to Mn perox

Oxychloride Copper alby and add in Nap OH.

Atacamite $Cu_2Cl(OH)_3$
Scarcely soluble in acid
its and Oxy(Cl) Copper

Copper Nitrate (Basic)
Blue green crystals from Aqueous
Sol in water, approaches
Connesponds to Atacamite
Its richness is as being
one of the few Nitrates
deposited sol in Water

$Cu_2(NO_3)(OH)_3$

Obtained by action of

~~partial precipitation~~ of Copper
Carbonate on Normal Nitrate
or by partial precipitation
of the latter with a
Carbonate the Carbonic dioxide
gas of which escapes

Hydrated Normal Copper
Nitrate corresponds in tin foil
tates is oxidized gradually
& forms basic Copper Nit

$Na_2H_2Sb_2O_7$ (is the usual
Soda Salt) try it in tube
or scraped in the O plate.

Lots green Sb Compound
Salts of Thio antimonic
gas perhaps mix Sulph at boiling water

Ferric hydroxy sulphate with
Arsenous acid (Arsenic) very
slightly soluble

Arsenates & Arsenite of heavy
Metals may act as hydrogen
of Conductivity with flakes
or Cu O Reduced Chloride is
used

Copper salt Schweinfurter
green also Scheeles salt
green

Hypochlorite of heavy metals
Hot water with Na

Sulphides of heavy
Metals.

Lelande
Use flake of zinc mixed
with the Sulphate
for this work like also
Nickel battery

Zinc hydroxy dissolves in
Ammonia Oxide K Oxalate

Discarded Mr Cu moulds of
disc records they oxidizing
the Copper for Lelande &
using Ni for hydroxy

Heat Room with Cu &
also Cu reduced Metal
also Ni metals

Persulfates of Cu or Fe form basic salts by adding $CuOH$ or Fe_2O_3 OH – to make insol. in NaOH, or NH_4 Chloride

ditto Nitrates

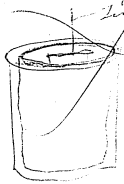
Bi Chromate – Etc

Basic Arsenite

Among Copper Copply reduces Nitrate Soda to Nitrite Soda and part Nitrate [illegible] when Copper or Acid is added

In presence of Cerious salts Atmospheric O_2 is absorbed by Arsenious acid,

Mix Cu hydroxide with Kaolin China clay or other powder in mixing machine, mould & heat to dehydrate & reduce to CuO, & then heat to red heat in NaOH Etc



Coconut or Peach Kernel Carbon ~~[illegible]~~ Saturated with oxygen in the process

Zinc & Copper
NaOH, Cooling
Arsenite Soda which
is depolarizing agent

Lead & other Metals.
for replacing Cu –
Ar. Sb. Etc – there are double
Metals
also Quad Metals,
bring occasion to Metals

Basic Phosphates

Sheage [illegible] of high Nacl
treated Metals, [illegible] with
Nacl OHx by having [illegible]
access on the [illegible] then
washing & [illegible] in Lorch
NaOH, Then [illegible] NaOHx

is then [illegible] – Iron can [illegible]
[illegible] with [illegible] can [illegible]
an [illegible] divide [illegible] the,
for staying [illegible]

Could forget to try Ferry and
[illegible] Salts organic
[illegible] organic
to [illegible] [illegible] Zn(OH)2

Perox lead only little Sol
in NaOH, Mixture of Salt
with buffer [illegible]
containing [illegible] of Zinc
to keep out Pb(OH)2 from
reaching Zinc Electrode
This is a general idea

Stable Cupric the Basic

Salt 7 CuO, 2 SO_3 5 H_2O

Prepared by digesting
Basic Cop Sulphate
7 CuO 2 SO_3 5 H_2O with
10% Potassium hydroxide
Sol washing precipitate
with Cold Water & Albertol
& Dry at 100 Cent
Light blue green color

The Basic Sulfate could
be obtained by action of
50 cc of 1.2N Sodium
Hydroxide on a sol of
5 grms Cop Sulphate
in 200 cc orth water
washed & dried at 100°C

Break Asbestos in $Cu(OH)_2$
& press dry again

Try Sulphonic acid salts
for dissolving Lyophobic
such as Butylsulfonate of
Soda, Methyl ether
Sulfonates

Get all the Oleates of
the metals to alloy
with Rosin Oil

Try the Azo compounds
as oxidizers

Artificial Sulfide Lead made anode in Sulfur Water producing small quantity of Lead Sulphate or Salt Peroxide Lead is formed Acid of high minimum Exceed 1/5 or HAS formed the peroxide protects Sulfide from action of acid

Barium Ferrate not decomposed by Cold Sulphuric Nitric Acid or Concentrated Zinc —

When excess of Alkali chloride is added to Ammonium Sol of Nitroprus- an usual salt precipitated may be used to get Ni from Nickel where other hydroxide are dissolved

When solution Containing Ammonia & Cupric Hydroxide are electrolyzed with platinum or Iron Anode peroxide of Copper is deposited on anode —

50 ↓	31		
200 -	62		
400	76 -		

group 1

Mustard Gas, highly persistent
Lethal in low concentration
dont penetrate a German Mask

group 2

Chloropicrin - NC Mixture
Moderately persistent, Lethal,
Medium concentration necessary
penetrates present German Mask

Group 3

Phosgene possibly Cyanogen
Chloride, or other non gas

Group 4

Bromobenzylcyanide
moderately persistent not lethal
Effective in extremely low
Concentrations
Diphenylchlorarsine do

Butyl Mercaptan -

Stannic Chloride -

Silicon tetrachloride - group 1

some penetrate respirators

Gas in masks include

Lachrymators Sneezing &

Camouflage gases +

Remark on group 1

Irritant gas affects Eyes

throat lungs & skin -

Boil point is 420° Fahr

at ord temp vapor given

off very slow

Keeps evaporating for 2 or

3 days & can be a long

Report days must experiment

with shells to see

to finely spray the gas -

hence will not persist

so long

Diphenylchloroarsine

a sneezing gas very

irritating to nose. Head

clumps in granules of

1 part in 10 million pts of

air - difficult to filt

also to pulverize infinitely

divided form necessary

penetrates all masks

with secondary except

latest type of masks

specially fitted with

Charcoal packing

Phosgene, low persistency

very lethal (Oxley)

Chlorpicrin 2 to

3 times more persistent

than phosgene

is also quite deadly

is used with 20% Stannic Chloride (smoke) valued high by British for persistency penetrates German mask quite easily

Brom-Benzyl Cyanide most powerful lachrymator known. it is 1/1000. more diluted in air Ethyl Iodoacetate - is quite persistent. - about equal to Chloropicrin -

Butyl Mercaptan foul smelling like skunk used to disguise other gases

Stannic Chl smoke. Valued penetrates masks except they are filled with combustible cotton or wood padding but dead penetrate nearly as much as Diphenylchloroarsine

Its used by the French in bombing charges of all gas shells to show the point of burst

British mix 1/5 th Stannic Chl & 4/5 Chloropicrin to form a shell filling it has more persistency than any other compound except Mustard gas.

White Phosphorus Best
Smoke producer Known

Why not Hydrofluoric
acid —
Cocodyl — Mustard
Burning Sulphur

They want a gas they
can give 7 lb + 7 lb
by special device they
USA can change them

from my reports I notice
Germans use Ethyldichloroarsine

also Phenyldichloroarsine
also Prussic acid — Diphosgene

German used Chloroacetic
acid, Chlorosulfonic
dioxide

Frenchman use Chloride of
phenylcarbylamine —
Bromomethylketone

Chloroformate of Dichloromethyl

Mustard gas, Dichlorodiethylsulfide

Get Copy of 441.52

126
34

Demand made
from Information Section
of War Dept — Room 2-224
group B 6th & B St
Washington

174

130 (300 (23.7
260
400
390
10
23.7

2000 | 150 000 000 (70,000
14000
0

324 | 4000 (12
324
0
768
648
324
81

324 | 500 (1
324
12 | 500 (40
324
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324
648
648
648

600
300
180 0000

1253 | 107750 (85
10024
726

107.5
1.0
7.8
5
3

340
12
680
340
4080

12 | 18000000 (15 | 25,320
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60
60
140.0
653
12530
10612
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400 | 15 00000
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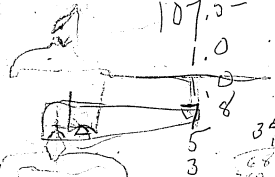
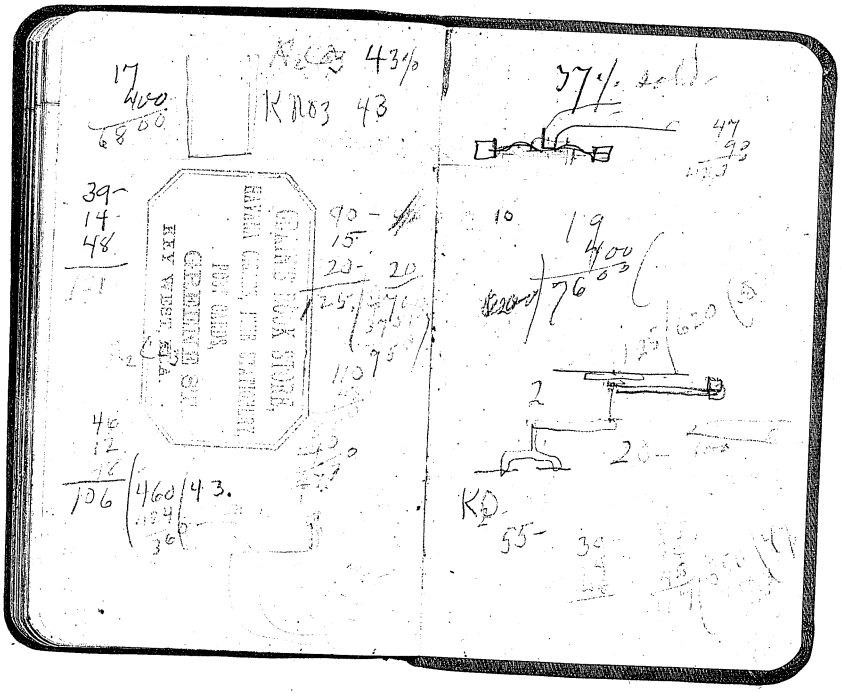
37
4




43%
KR03 43
37%
GARDEN CITY STEEL
KANSAS CITY, KANSAS
KANSAS CITY
CHICAGO
ST. LOUIS
KC
55-

Notebook Series -- Pocket Notebooks
Notebook, PN-18-09-10.1

The dated entries in this pocket notebook are from September and November 1918. The book was used by Edison to record ideas about experiments to be tried and other tasks to be performed. Some of the experiments were conducted at the garage at Glenmont, Edison's home in Llewellyn Park, New Jersey. There are numerous entries pertaining to storage batteries and Lalande primary batteries, including chemical experiments involving copper, nickel, bismuth, lithium, and zinc. There are also notes on disc record production, along with some entries that were copied from published sources. In addition, there is a drawing of a receiving device for submarine detection, with a notation that it "should go in war book" (PN-18-09-10.2). Among the employees mentioned in the book are Peter C. Christensen, Charles T. Dally, William W. Dinwiddie, and Ludwig F. (Louis) Ott. The pages are unnumbered. Approximately 160 pages have been used.

PN-18-09-10.1
E-1697

☆2996

Sept 10 1918

Sept 10th 1918

Make some pure crystal. Bi
Wash & put in 2 lbs KHO.
Li heat & then put Zinc
in sol & see if Bismuth comes down
Bismuth,

2 Off rip up a 1/2 grid
with Nickel & Coulombing
Bismuth Water cooled
make then a large
Nickel sheet & make
NiCl, & make & cause
it to coat the Bismuth
to deposit on the Nickel
sheet dissolve off Bi
& Repeat, ~~Hire b~~ & repeat,

See if Zinc replaces
Sol in Potash water
if less with Mercury
K –

[59]

Sulfide of Lead formed for Anode goes to PbO_2 by Current. Strongly Lead All in sulphuret of K. Storage. Try def Electrolyte, Pb Sulfide anode is a conductor with S reduces PbO_2 ??

to remove Copper, from Nickel plating bath in electrolyte Na — also use Current, also ground off — turn off —

good. Faraday 2nd Vol p56

Sulphide of K. platinum & Copper, powerful Current Current permanent, as the Zn Sulfide formed is sol in the Sulfide of K —

Now use peroxide of lead PbO_2 have a flashing protosulfide ~~is used~~ ~~or yellow sulphuret~~.

yellow sulphuret is meant

Faraday say PbO_2 ok in yellow sulphide of K

~~ok~~

For storage etc use flour Zinc pressed in Zinc or Hg tubes

Using solution in which $Zn(OH)_2$ is insoluble, —

Zinc possibly slightly amalgamated — Use Zinc tubes for Export.

Peroxide lead is capable
but by fusing PbO with Chlorate
K below Red
by fusing Pb for considerable time
with KOH.

When Acetate or Nitrate lead
Electrolyzed, lead deposits on
Cathode. Peroxide on anode.
Ditto fused Sulphide lead
in Sulphide K - and do.

PbO2 dont combine with acids

a plumbate of lime can be
made, acids free the PbO2

Chloride of lead Compound

Cassel Yellow
Turners Yellow

Protosulphide lead
Mix S with heated lead
Strips of lead burn in S vapor
Melting lead & plumbing (before)
Heating proto ox pb with
Sulphur
PbS melts at strong red heat
Volatilizes at strongest heat &
sublimes red compared of kept
from air
If PbS quickly reduced and
gives off most its S.
PbS is insoluble in Alkalis or
Alkali Sulphides —

In forming blanks use
thin 003 sheet Zn + strip
by Cerium —

Spun glass so its fine so sticky
breaks up so it like flock
When diluted ½ off of glycerine
Must heat in steam & moved
Articles to replace
Rubber in storage battery
Mills Cameron Resin -

Acrolein acts violently
on Urtine form yellow
moderate amorphous Solid

Candies made by
action of K Sulphide on
glycerine

Formaldehyde is produced
by dry distillation of
Calcium formate. It could
put this to Practical, also

use instead of formaldehyde
being Cheaper

Alkaline Solutions of
Lead oxide is given
by alkalinoids of
Chromic, Stannic,
Antimonous & Arsenous
oxides; the acid
Combines with the lead

Chromic Oxychloride
acts with violence
on Benzol producing
Resins

CWJ

Dichlorhydrin heated with alcoholic Ammonia yields Ammon Chloride & Chlorhydrin imide

White amorphous mass insoluble alcohol Ether Concentrated even boiling Sulphuric, aqua regia or Strong Caustic Potash

In hot water at length up Enormously yields a perfectly transparent jelly

9 mol Ammonia 4 Dichlhyd & alcohol contains 4 % of ammonia

Watts Dic 2nd ed p 318

Chromate Baryta insol in KOH,
ditto Bismuth
" lead & little cat.

Have foreman at Lewisham growing select 4 oz samples full kinds Lewisham shavings
Must look dif in growing & test for Lithia & Strontia?

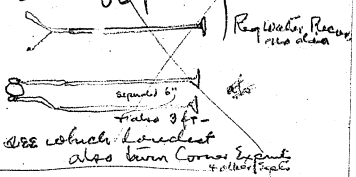
Glyoxal, prod
is an Aldehyde
pass HCl Condensation
it to a solid insol
in something
Cheap made for colour
Nitric acid on Ethyl alcohol
This may best condensate the colloid.
Glyoxal is a viscous amorphous substance

Phthalic Aldehyde
Alcohol Sol mixed with
Alcohol Sol K Cy. gives
Amorphous ppt 1/10" Cond
Apolymerides unknown
Composition

Resorcyl Aldehyde (from Resorcinol)
Extremely unstable converted
by Dehydrating bodies or
prolonged Exposure to air
in Red Amorphous bodies

Drying
~~Dried~~ Blanks before trimming
till fill. K or non Acetone
gasoline or other usual
Polish with rubber or
rouge (or
rouge) or
something that leaves a
residue that dont
result,
Pure and

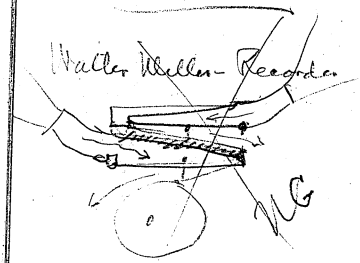
Experts at Oberlin
Try Dry then two 1/2 Liters
Each 50 ft Long



~~Lime Double Salt~~
~~Potassium Zinc Sulphide~~
~~ditto Na Zn "~~
~~Dolwater, Edwards~~

Asphalt Natural & Petroleum
~~Contains~~ Coal Tar & Pitch
Contains Saponifiable
Resins — Make some
Triacids might get Gallic
& Other per Resins Thus
Rosin —

Walter Miller - Recorder



~~Nitric~~

Dichloromethylsulphites
by Dichloromethylsulphurous
acid, not oxidized by Nitric or
aqua regia but decolorized
Zinc with excess of H_2
more than due to H_2SO_4 added at
times — Works under Sulphur
acids
Tri Chloro acid dills

There are an Enormous
Number of Organic
Compounds with Sulphurous
acid. Making acids
which act variously
on salts might be one
Valuable for Leblanc

Dally - Print the plaster blank made in Blank mould

Replace Rosin by Wood Tar patch see if it Oxidizes

Distill gilsonite down as long as oil or m but solvent of use molten of Rosin

Try Resinate ~~Acid~~ + also Res Mg in Oil all ~~[illegible]~~ gelo

Resinate Pb too high MP

Take a Nickel Mould + stone it down - One of new process preferred + see if .001 holes in it - probably none can be seen, as the holes are filled spongy -

Rosolic Acid -
Action on phenol of
Metallic oxides, such as
Peroxide Manganese &
NaOH. by heat
is difficult to force
product from Mn but
I only need Oxide!

Bakes together at 60°C
& Melts at 212 (10) in
boiling water
amorphous almost
insol water

Another one says
Mercuric oxide is better
than MnO_2 for making
Rosolic. The reaction
takes place at 150° & all
over in 10 min, Prepare
the Rosolic from the
Hydrated Hg
Contains pure Na Rosolate

acid likewise the Rosolic

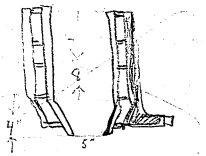
also can be made by
heating phenol with
mercuric Chloride with
Evolution of HCl

Possibly Rosolic acid
$C_6H_6O_2$ may be made with
6/4 phenol -

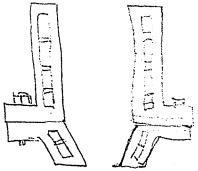
~~Chlorochromic acid
acts on Benzol
to make Resins~~

Chromyl Chloride
or Chlorochromic Anhydride
Makes Resins with Benzol

7" dia



Try Cutting with wire, also Gigli's saw



Alcohol containing Potash
Electrolyzed gives H at
Cathode & Alcoholate
Resin at Anode
probably Methyl gives
Condensate

Acetamide heated with
Salicylal. yields yellow
substance insol in alcohol
after washing with Alcohol
if now washed with
Strong HCl. gives a reddish
Brown Spongy substance

Acridine is from the higher
members of Coal tar
distillation MP 107 - Vap D
6.10 inhaled either in
dust or vapor causes
sneezing & larger quantity
Coughing

~~Retorted~~ H_2SO_4 + $K_2Cr_2O_7$ gives a brown red sublimate

When semi solid portions of Coal tar Naptha which boils at 300° to 360° is treated with dilute H_2SO_4 + acid sol precipitated with $K_2Cr_2O_7$ a dirty brown precip obtained which by repeated sublimation with boiling water yields yellow crystals of basic chromate treated with ammonia yields free base

Thomas — 2nd Sep 24
under microscope

Chromic Acid is best agent to act on sublimate to yield resins —

Crocus of Antimony formed when antimonous sulphide treated with alkali ochre brown powder if dried gently heat melts to glassy mass without loss should be able to sublimate under pressure as it intumesces when scalding

Nitrobenzol heated with NaOH hypobromite gives azo Nitro-benzene, when stopped at a certain stage the product dissolves in cold strong H2SO4 then H_2O precipitates a Resin

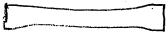
Benzidine digested with Carbon Bisulphide gives a Compound quite insol in all Common Solvents.

1st Sep 156

Ceroso-Ceric Oxide is more powerful oxidizer than most oxides having formula of M_3O_4. Strong H_2SO_4 liberates O_3 one can be held instead of K Permanganate

In Mould holder put springs that Reduce the weight of top mould or record to mere nothing

Make a blank forming Mould Slightly Concave.



also

× squares [illegible]

Christiansen —
Try Expert blowing Anchor Vapor in Chamber with Coffee + HCl from Crude Salt or Salt Cake or Spent acid —

W V a Water power - Nfro

K Chlorate

Soda C.P. K.C.P. Carbon Tetrachloride

Articles plated, shapes, sheets

Nickel plate sheets

Aluminum / Magnesium Lithia

Electrolytic Metals.

Chlorinated Hydrocarbon

Monochlorobenzol. NDS by product

L Oth find the heavy oils

Sol in alcohol -

vs glycerine leaf, Camphor, -

Carbolic acid - in alcohol, quinolin

Etc. also Chlorides sol in alcohol

Organic acids, Caustic soda

Ammonia in alcohol -

Glacial phos acid. Chl Tin

Chl Calcium H_2O, 50 lbs al -

Bromide Ammonium Sol al

Chl " "

Sol alcohol to prevent decomp Ethy

Ammon Cy

Hypophosphite of Ammonia V Sol

Nitrate Ammonium

Sulphocyanate Ammonium

Sulphydrate "

Bromide Barium H_2O V. Sol

Cyanide "

Hydroxide "

Hypophosphate Barium

Perchlorate " V Sol

Sulphocyanide "

Cadmium Bromide

" Chloride Sol in Methyl

Calcium Bromide very S

" Chloride BEST

" Chlorate

" Chromate

" Hypophosphate

" Sulphydrate

" Sulphocyanate V Sol

Copper Ammonia Chloride

" Chlorate

" Chloride Methyl

To prevent sticking

Copper Salicylate V Sol
Iron Ferrocyanide
" " Chloride
" Nitrate

Hydrazine
Hydroxylamine
Acetate lead
Nitrate "
Perchlorate lead

Lithium Hydroxide Slightly
" Chloride
Magnesium Acetate V Sol
Dg " Bromide H_2O
Chlorate
Chloride Anhy + H_2O
Sulphate " + H_2O

Manganese Chloride Anhy + H_2O
Nitrate V Sol
Sulphate V Sol

dilute

Mercuric Acetate
HgCy
Mercuric Chl

Phosphotungstic acid
Potassium Chloride
" Hydrosulphide V S
Hydroxide V S
Iodide
Acid Orthophosphate
Monosulphide + all K Salts
KCy S Sol
Stannous Chl Anhy
ZnCl

Carbonated V S

C51 J

Rosin stripping

Advantageous, slight Acetate Magnesia
" considerable Mercuric Chloride

22 only fair KOH,
Conc Chloride Calcium
is very good,

Alcoholic, Conc Very Very bad,

Dally-Dumoulin doing it
Make good Rollen stone
Chunk Clay - Silicate Magnesia,
Kaselghur Silica, + any other
we may have,

Test the Quicklimed in Alcohol
of the gob that dont soften
than act on usual way that
to liberate the Resin from
supposed Ca Resinate -

Make some resinate of Soda then
Oxidize Solution by H_2O_2
Ferridcy K - PbO_2, Permanganate K
Hypo, Na Perox - Chlorine Hot air
Then neutral to recover the
Resin & ascertain its properties

Bromides -
Calcium Br Very Sol Alcohol
Zinc Br " "

Chlorides Zinc Cl - 100 al -
Bismuth Triche 50 l anhy
Calcium Chl 50 l anhy
Cupric Chl Sol 53 "
Ferric Chl V Sol. "
Ferrous Chl 100 al "
Lithia Chl 2.475
Magnesium Cl 50
Manganese Cl Sol
Mercuric Cl 43
Nickel Cl Sol
Potassium Cl Sol
Stannous Chl Sol

Zn Chl very sol in Ether.

Acetone probably better than alcohol,

For Smoke formaldehyde vapor & ammonia. ditto formaldehyde with gas –

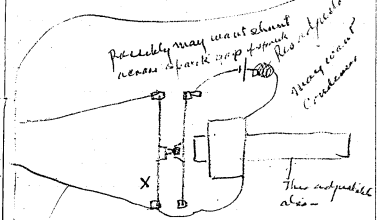
Try subliming Oxalic acid for smoke – try it again.

Coating blank moulds with Hemp palm alcohol dont seem to be a success

Try mixing Gum with Rubber to increase the Conductivity – ditto Sandarac

Try thin discs of Tin Copper Zinc lead, Brass Aluminum Nickel – Amalgamated Tin Copper, –

Also Rubber (hard) & soft – Celluloid –



This adjustable, to get a high note self vibrator then low waves not audible affect dia X – vary the volume or note & so that made audible,

Should go in war book

Take fresh gob & heat in a liquid to stop oxidation & press –

To prevent oxidation add a little Linseed oil –
ditto Paramedaphenol –
ditto Paraphenylenediamine
ditto 6/4 –

Treat the Resinate Mem with acid to remove the Oxidized Resin

Make Solution Resinate Soda – Oxidize the Solution till Resin fully oxidized then precip by HCl & wash & dry & then bring down MP by addition like Stearic, Stearoil etc –

Around 2% Sulphur in Rosin makes it leave dish better, Excess not so good

Rosin & 6/4 with para makes leave dish OK changes Color darkish nearly black Considerable gas comes off so foams greatly but not so brittle can scrape chips also can't scratch with pen Something in this –

HCl ng – Tetramap NG
Carnauba NG

React on Resinate Naoh as much as possible & precip by HCl

get some hard wood Tar pitch
Beechwood Tar pitch &
Reg Southern Wood Tar Pitch

Ask Dupont Co. piece of Cumerone Resin.

Ask Gray of NY where I can get Aldehyde Resin from Cashone Refrs

Try Gilsonite with Sulphur

Heat Naphthalene with Sulfur

Heat condensate Carbon to 600 Fahr then let it absorb air under Hg Column

Take Gob out mixing & pass through Rolls 120 deg Fahr also hotter.

Oxidize NaOH Resinate separate then bring down its softening point by adding a solid softening agent

Use Mg or Mn Resinate wholly with something that reduces its softening point down to Room & which does not oxidize — try Cleanic, Naphthaline, Gilsonite, Straw oil.

Make blank Silicate Mg Varnish dont Condense just dry — see blank if its molded close in Printing — Condense in place to stop wrinkles Cracks Etc

Old Export book says need mix of Gilsonite + Room with Red lead Condent scratch with Nail, then say to Gilsonite alone Rosin not necessary + later say Gilsonite 33% dilution

off works OK + wont scratched by finger nail

Aniline Hydrochloride make Rosin less brittle, stands a bat.

Tetrachloronap + Resinate of Aluminum in proper proportions acts like shellac chips by itself doesnt scratch with finger nail

Lead Resinate used in our reg Varn to beat off the scratch Resinate Tried.

Manilla Copal after heating to get tough they fed to Tetrinaphthol bends to the hand

It is said than an Ammonical Solution of Lead Acetate well precipitate Molasses from Water + make it insol see if Can be used for dress

Hard Coal Tar pitch 60 — 57
Chinese Clay. 3 flock hard to Cut fairly hard to scratch
Promising —

Dally mix with Reg Varnish as much china clay as it will stand & be capable of being put on to dummy Construction in condensing
dello Silica, Magnesia, chalk

Then try with more alcohol + add more china clay & so on till we get 50% Chinaclay.

Dulley — Make 300 China clay
120 Rosin — 30 flock —
+ Squirt in Macaroni machine pass thru 30 Mesh + moved blank in pieces —

Try the Soda Alum again in mixer pressing a little steam thru to prevent loss of water —

Dalley where are the 2 records you made that was made from 30 mesh powder from Mercantile Went to see of Varnish cracked

Try Gilsonite with Mg Silicate flock + flour sulphur

Dissolve Gilsonite in a solution not attacked by Chl Sulphur + sulphurize in various proportions + decide off —

Also try Rosin Manilla Copal Try that Naphthalene + Chl5 you made,

Varnish Exports Mg Silicate —

Varnish 2 Each — 4 Print
All 4 Para

Req Var. 1 Para Req 6/4 —
" 10% 6/4 4 Para
" 15 6/4 4 Para

Req Varnish 4 para but on 6 6/4

Ask Storage Dalley Records to Charge 2 Cells Dalley set aside for 2 weeks

Assemble new charges vrons with 1 Cell & new chg Nickel with other to see which takes charge

No 1 of 72

Write on paper with 15% solution of NaOH then expose to Bisulfide Carbon & wet for blind people

Also use regular ink & put powder in bottle solution & add a gum that causes written with a dust or with a gritty powder Cryptolian for Blind —

Lefande by Oxysulfide of Cu's CuO | 5 CuS

Ignite the Nitrate to get fine CuO

Use non assay Cupric hydrate precipitated from pulle washed Carbonate pp 2x sq. added of NaOH

When dry: Cupric hydroxide stand temp of 212 before starting to turn black turns black when boiled in alkali —

After dry put some in NaOH 21% & keep at 110% fahr see if it turns

It's CuO 2H2O

Polysulfides of Copper pentasulfide of Potash precip from Copper salts (very colored) precips turning black & after drying not altered by exposure to air or by washing or boiling water

di tri & tetrasulfides of Potash precip Corresponding Bisulphides —
CuS_5 is from Potash Kolb.

Thus should work
of Sulphate of Zinc & Na Sulphide
Solution & the stable

Probably mixed Cupric hydrate with Manganic Chromic & Sulphates gives a Compound that will be stable

Faraday's Sulphuret of Palladium made thus. Equal weights of fused Caustick & Sulphur are mixed & heated gradually in a Florence flask till the whole has fused & united & the Sulphur in excess begins to sublime
Is then cooled & dissolved in water so as to form a strong sol, on standing it becomes clear

Cupric oxide by precipitation is reduced to metal by Ether whereas the oxide prepared in any way is not reduced Easy to Cuprous —

Precipitate of phosphide
with acid.
Electrolyze phosphide
of Zinc + Cuphos

Use in Coal tar pitch
Salicylic acid to lower MP
+ make blanks out of wire & bells
(also found high BP liquid)
for Arsenic -
Lyndon

Dissolve cell, Change
Remove Nickel spark
in platinum dissolved
(& also then acid back
Drak Mercurous
Chloride also

$CuOH_2$ formed in ice water, used in
Lebanon. Change it by current to
see if higher oxide formed. It
changed from black

Precipitate some Fe, Mn, Co, Ni,
say 20% with $(CuOH)_2$ take
of acid Calculations -

Mix Brake lining Carb
+ Chromic acid with
Hydrofluoric hydrate
+ also anhydrous lime
in Mixer make blank
Vacuum thing period of
calcining the wood charcoal
by heat [illegible]
process

Rotene C18 H18-
Rosin oil mixed 1/3 wt
of [illegible] heat [illegible]
HS Cannot Urea
decolor & get Rotene
or Mixed with
[illegible] Coumts.

Dissolve rubber in Rosin
till right consistency
should be like Gilla
(Perchar or Pontiac -
belong which is Rubber
& Resin — Try Naphtha
to mixed —
Might swell with
Salt Nap & then add
A to melted Rosin

Write Wal Lampin
in re Phenol & Rosin

Jnl of Chem Industry
1888 Dec 31
p 807 -
W W Staveley

see his letter
Its not same thing but it
may interest him —
Said use Trico Sulphate
Soda but finally
adopted Salt
to neutralize the Benz Sulph

Try Phenates of
Metals for dise

[51]

Condensing Phenol with
Acetic anhy + Chl Zn
10 grams phenol 20 grams
acetic anhydride 20 grams
Chl Zn heated 30 min
in Reversed Condenser
Amorphous Sub should
be well washed with
water + then with 5% sol
HCl. in water bath
then precipitated with
ammonia - grows
an amorphous substance
insol H_2O or Phenol Ether
EtOH alc or ether

Mn Oxides 30 combine with
Equal atoms that may do for
Leucoids —

Suppose we use an oxide
which when reduced
is sol in KOH or NaOH
if we now dissolve a Potash
Salt of an acid which
acid precips the MnO
in KOH we would prevent
it dissolving prevent
it didn't stop the formation
of 2 manate

Try Red CuO from plate
or scales + use NaOH
in which 10% of
strong Na Polysulfide
is dissolved
also - only polysulfide

Make Cupric hydrox from following Copper salts, & test after digesting in 21% NaOH for stability as to heat.

Phosphate
Carbonate
Arsenate
Borate
Aluminate
Resinate
Oleate

Also take some & heat in air to see temp turns black, also see if Hydrox dried at def temp short of turning black will be more stable in 21% NaOH.

Also try 15% NaOH
" 15 + 21% NaOH

Also make several def kinds of basic Cupric salts & precip these cold,

Stable Hydroxides even in NaOH heat

See J. W. Van Bemmelen
Zeit. anorg Chem 5, p 466
483.

Cupriedane hydrate prepared by slow action of dilute alkali on various Copper salts in cold + not affected by alkalies or heat, may be boiled in water without change

over

~~1 liter per gram~~

Hydrogel of Cu hydrox

The precipitate hydrox is purified by repeated washing with large quantities of cold water 1 liter per gram the mass being collected on a cloth filter after each washing otherwise not lasting more than 1 hour to avoid

Change of color, pure hydrogel is thick bright blue jelly after pressing between cardboard 24 hours still contains 20 molecules water

Absorption, retains its color under water for several days but in ~~that~~ water resembles

Crystallized ~~hydrox~~ rarely undergoes gradual modification until it turns green when exposed at room temp for several days when air is dried artificially it loses water until its vapor pressure equals that of the atmosphere the formula is then $CuOH_2O$.

The bad neighbors of jelly is only partially eliminated time eliminates the water gradually this is helped by heat

the hydrogel is stable towards alkali + alkali + acid

The crystalline salt prepared by slow action of very dilute alkali on various copper salts in the cold is not affected by alkali or heat

says in some way the alkali acts in same unknown way to produce the stability

CuO disassociates at 960° Cu₂O increasing as temp goes up.

When blue hydrox turns color to brown it $Cu(OH)_2\ 3\ CuO$ or $Cu_4O_3(OH)_2$

also Cu salts with Barium hydrox form basic salts except acetate or perchlorate which have no action

Trans Vol 95 1909 p 370

H Medford Dawson — Crystalized Cu hydrox

adds aqueous ammonia from a burette with a cooling & coil stirrer solution containing 50 grams of cupric sulfate dis in 300 to 400 cc water until supernatant liquid begins to assume the blue color of ammoniacal copper solution

The precipitated basic salt is well washed & triturated in a porcelain dish with with 300 to 400 cc of Ba's solution of sodium hydrox free from carbonate & blue hydrox dried in vacuo over H_2SO_4

after every trace of sulphate
had been washed out
its Crystalline hydrox
to bright blue color
& to not at all readily
converted into the oxide
at 100°

Crystalline Cupric hydrox
been obtained by various
plans see
Becquerel Compt R 1852
34 p 573 –
Böttger Jahresber 1858
198
Peligot Compt R
1861 53 209 –
Van Bemmelen p 474

If Cupric hydrox & metallic Cu
be shaken in a test tube in
NaOH. the Cu hydrox will in
a few days be completely
reduced to Cuprous oxide

– this shows a large amount
of graphite must be used
so there will be no copper
near the hydrox.

As Cu reduces CuO to Cu_2O
it is probable that traces of
a sulphur compound will
act on metal Cu & sulphuryl
& prevent it reducing the
CuO, this may explain
NaOH Carbolic results

see if it affects the
hydrox of Cu if not
try it –
~~Cu(OH)~~ ~~[illegible]~~

Cu OH precipitated by reduced copper (Lowry)

Possibly some one dye or small coat reduced copper. also a fine non sol Colloid might be precipitated with the $Cu(OH)_2$ to keep the reduced copper from reducing the $Cu(OH)_2$ but ~~Allman says Cupric hydroxide is not reduced by metallic Cu~~

Allman says
Trans 97 1910 603
that crystallized Cupric hydroxide when treated with Conc Alkali at room temp is converted into Cupric Ox

Haberman Zeit anorg Chem 1906 50 315-19

says a fairly stable form of Cupric hydroxide got by digesting Basic Copper sulphate $7CuO\ 2SO_3\ 5H_2O$ with 10% KOH washing in Cold water + alcohol + drying at 100°C

Basic salt is obtained by adding 50 cc of 2N NaOH on 5 grams $CuSO_4$ in 200 cc water in Cold, its washed + dried at 105°C

If we succeed in precipitating (regenerating) $Cu(OH)_2$ try same thing with Nickel also Bismuth,

layer of turpentine on Lakunde to absorb O or Ponderomotely reoxidize the Cu(OH)$_2$, Amyl Alc of peroxide absorbs but only when exposed to light

Perhaps Rosin or resins dissolved in KOH or NaOH will increase the solubility of $Zn(OH)_2$ like Silica forming double salt

Highly Oxygenated Salts
Eko 7 Jaubert (DRP 229572)

Sodium peroxide hydrochloride
pass dry HCl into Sodium peroxide suspended in Carbon Tetra chloride
Colorless powder, sol water
10% available Oxy

Sodium perforate
Sodium formate obtained same manner

Sod peroxide Ethyl acetate
prepared from Na peroxide & Ethyl acetate in Chloroform

Naperox Benzoate by using Benzoyl chloride

Addition of Ammonia to a Conc sol Zinc sulfate till ppt disappears + addition of large excess of H_2O_2 30% H_2O_2 Zinc peroxides obtained
$10\,ZnO_2 \mid 4\,ZnO, 5\,H_2O$ +
$8\,ZnO_2\ 4\,ZnO \mid H_2O$

Ferrous Oxide can be extracted from many things, 1st Reduced to Ferrous + dissolved out by Naphthenic Acid in light petroleum it extracts quantatively the ferrous ox from aqueous sol of ferrous salts.

R W Charitschkoff
Chem Zeit 1911

Dolly - Try Candellerin Wax
Oleic acid, Japan wax
paraffin, with Glycerite
Lanolin -
Naphthalene Camphor oil -
Rosin oil - Cumaric acid
Trichloro phenol -
Tetrachloronaphthalene
Salicylic acid
Aniline hydrochloride
Resinate lead,

α-Nitronaphthalene reacts with Sulphur to form an amorphous product unobtainable Insol in alkali + only sol nitrobenzene, showing sulphur Reaction takes place at 240° Promising Transactions Vol 67 1895 p 640
MP 155, Carbo crystl has 19% S

Size of $Cu(OH)_2$ will
Crystallize from acetone

Cupric Carbonate did give results
does something to make it
Easily filtered from 20% NaOH

K silicofluoride removes
nearly all —

Bone black removes all
discoloring its Carbon &
not discharged —

80% $Cu(OH)_2$ & 20% graphite
heat, gives a little over
140 milamp hours per gram
think can ~~get~~ get 160 ~~20%~~ 80%
by charge rate of 50 ma —
above work at 100 ma

per hour —
This appears to be nearly
as good as $Ni(OH)_2$ in battery

Bismuth in storage battery
perhaps 50 mesh bone black
packed solid in cell caused
precent Bi from going in view
of its a floating Carbon
like $Cu(OH)_2$ as respect

We get 660 ~~milamp hours~~
for 980 ~~grams of black ox~~
~~(black)~~

Manganic hydrox is
got by precipitating a
Manganic Salt by
Cuprous alkali.
unstable to heat like
$Cu(OH)$ — try its salt or oxide

sesquioxide Mn can be boiled in NaOH & not dissolves
Manganous OH absorbs O from air to form sesqui OH

Manganite of KOH not sol in NaOH. NaOH NG

Manganic will probably combine with $(Cu(OH)_2)$ Iron & Copper, Mn Wonder

Make some hydrated silicate of Copper, think it will not be sol in NaOH, except perhaps as a colloid –

Also the Antimonate or its of $Cu(OH)_2$ –

Try Magnetic $(OH)_2$ & ferric OH. ~~with~~ with graphite.
Magnetic OXIDE hydrate worth while

[70]

perhaps NiOH by precipitating in large amount & slowly in ice water & filtering to avoid contact air dried
We might get a higher hydration –

Make some of the Crystalline hydrox of Ni

We might find a solution of some salt when strong that would dissolve $Ni(OH)_2$ slightly as an easily decomposed double salt when on evaporation would decompose & crystalize out –

Same with Copper

See if Copper Amon Sol: are Colloid – Bone black

Sesquioxide Cu or Cupric acid not known in separate state but Ca Salt often prepared Cuprate of Calcium beautiful Rose color by mixing Chloride Lime with a Sol of Cupric Nitrate, decomposes but slowly Krüger Pogg Ann lxxii 445 —
Crum Ann Ch Pharm
lv 213 —

Trioxide antimony forms antimonites
its very feeble acid
dissolves easily in KOH,
but salt easily decomposed
even by Zinc
[illegible]
it reduces Gold

Whitish acid antimonate of K
not dis by KOH, but
$(K_2O \cdot 2Sb_2O_5)\ 6H_2O$

I wonder if persulphate of Barium Sr or Ca is used in NaOH or KOH, if not could be used with graphite —
(Delkuke)

KOH dont precipt Barium Salts except when very concentrated, therefore a Barium Salt having a Loose OH, will work.

Bichromate — persulphate
How not [illegible]

As all oxides of hydrogen are slightly sol in H_2O long heating tends to cause crystallization of the [illegible]

Make some hydrofluoroxalic of Copper

Inq peroxide Barnmrgrafile

Present capacity of Leland

581 Milamp hours per grame of plate at 1 ampere rate. at 70 Fahr

1.38 gms metallic Cop for ampere hour at low rate.

our so far 1.900 metal per amp hour at high rate a nearly 1/2 at 1 Volt

Hello! Cell No 3 stand.

160 Fahr for 1/2 hour

at the time this is recorded in 21% NaOH. 45 mins used 46 ohmw

(S)

500 amp Cell single Copper Plate. Weight 870 grammes

Theoritic capacity 680 amp H

Actually obtain to 1/2 Volt 581 AH at 1 amp discharge rate and 438 amp H at 3 amp rate

85% Efficiency

Theoretical Zinc should give 810

obtain at 1 amp rate 593

73% Efficiency

NaOH Theory 670 A.H.

obtain 530 Efficiency 79%

all above at 70° Fahr

I notice that the blue CuOH dissolved in NaOH, dont turn black + can be filtered out this is stable, it may be a Cuprate, sea of can be got stronger by organic matter or otherwise,

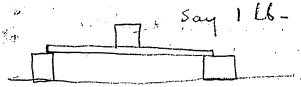
Heat blue NaOH 21% up & see if it will go black —
also NH_4m 21% NaOH if it will dissolve more, perhaps a mixture will dissolve considerable on boiling & coagulating out on Chilling + perhaps salting out by NaCl —

Manganate of Copper dont seem sol in NaOH.

L Ott #3 good
Silicofluoride & Chromofluoride better than #3 Ott —
but uncertain
#3 Ott best to date

Samen want to make some black hydrate of Copper — Make 2 pckts without graphite & 2 with 20% graphite 2nd 212

Also dehydrate enough for 4 pckts. 2 to be without graphite & 2 with graphite



for testing flow of records at 110° Fahr in oven with auto regulator —

Find out from McCheany why overdeposition is responsible for & inferior to Compositions —

Thinking shows found our CuO very fine & get porosity & better results

so fine that the bulk of plate per produced is as great as possible,

Daily think must repress blanks in raymond – then lacquer → perhaps make blank, varnish very light, dry + press in powder blank mould high temp with rapid condensing fan + then use it in frequent way to varnish –

See if Lehmann have introduced the Rubber for preserving plates

See if Copper hydroxide will lock plates together in baking –

In getting a good cement for Cu plates use 2" moulded w.s. mould on disc Ergonite moulded + baked with deformant arrangement to lock plates, Resin, Chl ammonia, NaOH,

different proportions,

Make alloys of Zinc + test for efficiency also if can get $Zn(OH)_2$ to flake off unless dissolving.

Get some Zn saturated NaOH, then some freshly precipitated $Zn(OH)_2$, at most 20% of XYZ of the NaOH, (10) 4 pts to 2 say 20 of NaOH record it work dissolves more, Zinc If this want good way when Zincate in saturated NaOH, + add the stuff raise how long it will run? try everything in Lab –

Colloids - Dry cell Islands

Semi suspension - Clay - Ultramarine
Wheat starch, gum mastic in alcohol
poured into a copper solution

Non reversible Colloids
Stannic acid
Reversible Colloids
Molybdic acid (not coagulated by electrolytes)
Glycogen, Dextrin some degree of stiffness
Tungstic acid Congo red
Arsenic Sulfide, Silica from Nasitic
by Dialysis, H_2SO_4 soon coagulate

Ferrocyanide Copper Uranium
Tungstic acid (most remarkable)
not affected by anything
Colloidal Cu Sulfide, many
metallic sulfides
Gamboge, Carmine (dyes)
Fluorescein, Uranine + many dyes

Dally Dry some BS
as exciter, Wood Tar,
Pitch — Petroleum residuum
Some of the Tar from Carbolic
acid Stills, Balsam Canada
Residuum from distilling Solvent
Naphtha Tetrahydronaphthalene
Coal Tar, Japan wax

L Ott, Take Petroleum
Naphtha Benzine +
Low flash Kerosene
Equal proportions
make many fractions
& find best Solvent
for Rosin —

When get good crystaline
$Cu(OH)_2$ put in 21% NaOH.
work on dill - pour off
the 21% & put fresh in -
do this several times to
see if it will stop going
into solution.

If it keeps going try all
the practical cheap
Colloids in the NaOH to see
if they will precipitate it

Copper dust by Zinc reduction
& stirring - wash & dry
Then put in Reg Hack
mould & mould 1/4" Hack
with high pressure -
Then print with heavy
pressure. Then use
to make Cog moulds.

Also try with minimum of some
binder, try that - ~~gum~~

Lots No 9 which is
Why precipitation & the
only one showing cheap
malleable cheap crystal
treatment & by magnitude
of 1/32" mesh went in
NaOH 21% 5 Hours at
118° Fah before showed
any signs of blackening
& then only on contact
at bottom of watch
glass we removed the
NaOH, all others only
2 or 3 hours & Carry
all samples Colored
the NaOH about same
tint, quite blue -

Nov 1 1918

Save Alcohol in Disc blanks

took 90 cc Kerosene
10 cc alcohol
33 grams Rosin –

dissolves on shaking perfectly at ordinary temp.

Can use less solvent if necessary & think –

The above Rosin dissolves at ordinary temperature.

Disc Blanks

33 grms Rosin
90 cc Kerosene
10 cc Alcohol

is right proportion for 6 blanks

Kerosene distilled as follows

cc	BP Fahr 75" Vac	
0	287	210
2	318	220
5	329	240
10	343	254
20	363	266
30	370	280
40	383	290
50	397	306
60	414	324
70	428	340
80	446	378
90	480	388
95	500	400

Very small quant 1

next largest 2

not quite 3
88° dry by BP Tables

Just a little smaller 4

No 4 may not be necessary

If we got 287 to 383,
the vacuum dryer would
probably do the kerosene.

C65

Make mixture of alcohol & water & get best solubility for Resin

50 water
50 alc

33 Resin of ok

determine the alc-water the water

Look into the method of preparing colloids & emulsions & get rid of Compressed air

95 grams by vol Kerosene
5 " Alcohol
33 " Resin

dissolves ok ordinary temp by shaking

98 Kero + 2 alcohol

Present Hoffman 1000 blanks.

Resin 163 lbs
Alcohol 500 lbs 73.53 Gals

Recovery 75% undistilled, Contains H_2O –

Latest determination of BP of Kerosene

cc	28" Vac	24" Vac	16 Vac	B
0	186	210	287	101
2	194	220	318	124
5	204	240	329	115
10	212	254	343	131
20	226	266	363	137
30	242	280	370	128
40	254	290	383	129
50	264	306	397	133
60	278	324	414	136
70	292	340	428	136
80	310	378	446	136
90	340	388	460	140
95	368	400	500	132

Limit of Thermometer

3 to 3½% alcohol OK

Put thing shake + bottle warm OK
Percentage alcohol

I notice that the first lot made that in 24 hours some settles out — and cloudy but it was not shaken

Try flotation oils instead of Alcohol for Kerosene Rosin dissolver

Pine oil	58 c
Pine tar oil	35 c
Hardwood	23 c
Wood Creosote oil	31

G Abmkvist in Z anorg Chem 1918 103 – 240 – 242 gives following solubilities in distilled water at 20°C or 68° Fahr

Nickel (OH) 2	12.7	mlg per liter
Cobalt (OH) 2	3.18	"
BiO OH.	1.44	"
Fe (OH)3	0.151	"
MnO OH2	0.43	"

See also Jnl Chem Soc 1918 ii 320

Legal Dept get copy US Patent Hydrogenated Oil Composition for marking Second reference US Pat 1.276 507 - 27

Paste for Stereotype Matts

100 China clay	
75 Starch	
150 Na_2CO_3	
Corn oil	10
Water	860

	Soluble 10%	Need Solution 20	30	40	50	60	70
Mila 1 to 1 V. —	25	575	475	375	250	175	125
Mila 1 volume to 1 gravity	95	244.7	242.3	223.2	192.2	168	160
1 Vol + 1 to 1/2 V	1363	1194	1075	575	600	462	163
Mil and 1 to 1 Vol	517	510	551	520	462	445	209

Dry Trichloride Chromium peach blossom — not sol in KCl. should work with KCl as Electrolyte, or KCl.

Chromic oxide in neutral or acid sol is precipitated by Ammonia — Keep dur from precip — If this ok then use Chl. Ammonium Electrolyte with Zinc

Chromous-Chromic Oxide ppted by KCl, without exclusion of air — $CrO-Cr_2O_3$ —

Basic Chromate (Lead) not acted on by Alkalis see Watts, Acetate of Lead & Chromate Lead Reaction.

& Ott make the Chromium hydrate p 949 Watts
Also Chromium & Ammonium Combination 950 & 951 page
Basic oxide Chromium p 951, Chromic hydrate

Chromate Zinc is slightly Sol in Water

Ceroso-Ceric hydrate.
Pour Chlorine into aqueous Caustic Soda in which the hydrox is suspended
Bright yellow.

Chromate of Copper & Potassium — Double Salt
$K_2O, 3\,CuO - 3\,CrO_3/3\,aq$
Obtained by treating recently precipitated cupric hydrox with solution of Acid Chromate of K. Only by mixing cupric Sulphate with Acid Chromate K & gradually adding K[illegible] Bichron powder equal in Weight. Sat & gives Watts, Mg. OK up to certain amt of NaOH. Excess NaOH dissolves it

Carbonate of Zinc & Sodium
Double Salt)

Carb Zinc & Ammonia
$NH_3\,Zn\,CO_3$ Deposited in Crystals from a Solution of precipitated Carb of Zn in a strong Sol of Carb NH_3

Carb Zinc & Potassium deposited in Crystals from a Solution of Chloride Zinc mixed with Sesquicarbonate of Potassium
Sodium same way

Try with 30% qu. of the Trinitro Di Nitro & Mononitro Solids - probably in Na Nitrite Zn should decompose them & form Nitrite Zinc Sol

Amdoplanol
Dillman pre war prices

Base CP $ 5. Kilo 1000 grms 3.17 lb
Hydrochloride CP 4.25. " $2.70

Base Consd - 1.62 "
Hydrochloride Consd 1.37. 80 cents

Amberols -
Loss to be added to the cost of records 7.37 cents
Off 699000 made in Sept.
352000 were OK.
Total Loss 26000 for month of Sept —

Amberols week ending 10/26/18 -
Inspected 90000
Rejected 14709
83.7 OK - 41.5% Light 9.2 Hair 2.1 7.0
Cutting chips 8.1 32 defects Collodion
Sept only 44% OK Okay

Haeckel to 70° 10% Ammonia & Sodium (Dillman)

Amberols
Force hot plates pours made of Cylinders & hold till set & central & they do no reamings - Use false sheet wax Rej Cell or Rubber to easy withdraw

More pressure to insure imprint

Perhaps can use hot Plates?
+ press & mould 2 min Time
Perhaps use Rubber

C951

Kneading —
Edges at bend too sharp —
Preliminary shaping in heavy steel
Mould to size & smooth out
wedges + dings etc. use hydraulic + heat.

Less bend + not as sharp as bend.

End rings instead of Gemming
all the way —

Do away with 450 HP air,

Stop lint + hair —

Make Principal Black Ox — run to
500 deg — Mould without side
9 pieces hydraulic elec pressure
+ put in solution to test
also unbaked + pressed then
heat to 500 @ 60 min. also
binder of Fernic Etc. etc also
Mi Etc. as binder, — Dip with 15% graphite

~~Try Reg Cup plate now made~~
~~Contact grinder to attend.~~
~~try 2 days 1st Then execution~~
~~all steps —~~

Make many manganese
precip under Various
Conditions Make discharge
Rate 100 & also 50 when
below 85

Print - Use metallic Elc and mix & pour in white rubber a hardening Compound -

Mould a Rosin clay flock or a Mouth Copal flock clay blank - Coat with a zapon dope containing Camphor dry & print

Make blank of Reg powder Then Varnish with Cordite & bake Then print back up mounted by stick Dic -
also method of Cordite use Celluloid dope with Camphor on -

Headboard Wood or Ivory Pocket Clean See To see Lieutenant mr. Bielstein -

See about filling Hoof for use gone, if possible stop it -

Dissolve Rosin in Kerosene Make blank 4 wood 3 Chalk + work regular Dry in Vac - Etc flock take up with Clarke for introduction.

Crack up some of our Rosin flock clay Mix & Mould the powder

As our blank is not porous as Var is loaded to prevent Var running in pores of Reg blank Make some Varnish not loaded & try This allows Var to contract more a fit blank

Bake Reg CuO powder from Silver Lake with increasing amounts of Soda up to limit. Then soak out excess to increase porosity + see if still strong

see if Edges bevelled w. pressed on or ground, + why bevelled Edges —

Mould the plates with some Wood flour fine + wet with KOH Burn the flock well Carbonize & burn out a large plate pouring

dittto Mix with Naphthalene Resinate Soda etc & burn out + reoxidize — Chloride amm

If have no small due have one made go down to Lake & see present mf Chods

and look work place for dumpheap Ask Chodinski to see the Various Samples from test mines —

Phosphate of Manganese + Ammonium Dof in 32000 pts water — pbty use Wyll Electrolyte

Peroxide lead & Chloroxide & Chl ammon Electrolyte

Can the Alkalis of have any organic matter turn permanganate K green

K permanganate does not act on Zinc or Copper

S

Probably Cracks Records by not holding pressure up when Cooling. With high pressure under blank can contract & surface not —

Fix Lithia Contract Letter to Daniels & to Hamphill —

See about Embossed cut pieces to hang them — also if Count be made of Hardened Steel —

Dez Ott gets the Kerosene & Dimmoddy makes the blanks & Prints —

Dissolve Wax Drips in Viscose solution,

Grind them 30 mesh or 20 Reg new style disc mix & Repress —

Look over Dallys Prints for Cracks etc & mark them & note those badly Cho — Note the softness in Cho blanks

Coat new Record with a mesh — Blacks & porous, Veres & prints,

Dook a blank on alcohol or hot Kero to remove some of the Rosin on face to make it porous,

Dally Represents some of the blanks that show up great as records (10) Represent them

Polish surface of good blanks (that come through) & varnish + Bake in our oven, Slow, using no filler but increase the Paraffin 4 —

Cylinder Records Discards
(approximate)

Nov 1st to 8th

	Discard
Moulding	8%
Printing	40
Reaming	2
Backing	1
Final Inspection	15 not 45%

Try newspaper sulphite pulp mixed of ground pulp with alcohol + also benzene + make blanks & points —

Also since we can get shellac try that,

Also try clay flock + phenol Resin with hardener in it 12% Alcohol dissolved & flock will be spread out.

(105)

Varnish Zinc Wood,
Paper, glass, Reg Var
& linoleum, + put away for
time tests for shrinking

Permanic acid delaude
Uranic salts should
be cheap now

Starch as a binder
baked then varnished

Cox head of SL
Delaude Lab —

Chrysoidin find out
the greatest amount
~~of~~ paraphenylenediamine
well dissolves in Aniline

Act on our wood pulp by
hot soda & bleaching to
split books - for blacks -

Try China Clay & linseed
oil - mix & oxidize use
harlem, also Chinese
wood oil - polymerize by
heat -

See if Resinate of Zinc is
sol in NaOH —

Dammar - Binders for wash on
blank - Celluloid dope - chalk - clay
Rosin, Manilla, Diluted Reg Var,
Shellac, Phenol Resin -
glue, Rubber, Japan Varnish,
gilsonite in best Inks and, Balata,
Stearate Ammonia in Benzene + acetone amyl

1 = Try a funnel on pipe in Echo box.

2 = Fix brass so can listen at table bellows operate tube. Each for see if moves down near it which furthest — if out phase has Phase tube moves Resonator. if second together —

Make an Echo room

3 5X5 in all dimensions for tube,

4 Try 1 ft diam

5 Widen Echo box 12 hours to 48"

6 = Put a diaphram on end of tube in Echo box 1st at listening end of tuning fork and 4 Catch Echo colors

7 Move fork box perhaps end of tube makes a node

8 Take fork box near to Werner + get record also move it away a Record Resonator

9 Take Crooks out of tube get it where ~~[illegible]~~ straight, also no Sunken Cavities

Cupric Antimonite $CuSb_2O_4$

dilute Sol $CuSO_4$ added to Sol of Potassium Antimonyl Tartrate in 8% KOH, grain crystalline powder

Chrysoidine –
Diazotisation
by Hantzsch Ber 1899
32 1699 1703 – Chem Soc
pt Vol 76 1899 549-50
wants Excess acid + 16 hours
for big yield, for aniline & other

Exhausted helianthin Sol decolorized to .45 Volt
Take 200 cc water
to cloud sol. Warm
add Zinc

Paraphenylenediamine

8 grams dissolve in 100 Aniline at 70 Tube

10 grams in 100 Aniline at 120° Tube

14 gr dissolve in 100. at 70°
when aniline contains
10 grams Alcohol

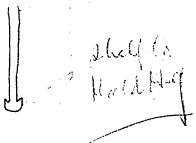
Cover Rosinator with
Cowhair allows
dec effect –

Extra Electrodes

Try these -

Try the all Brass Instrument tubes short & Long pair

Shande 10 lbs test Zinc for Cadmium which scales the Zinc



Straw Oil instead of Paraffine oil for Lelande set up as for with Ray Electrolyte top exposed with 1/8" Strong Zinc on shelf Freeze test also -

Get samples of Common Zinc + test also test for scale forming metals like Cadmium -

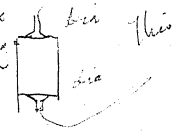
See if Can by pure black Sulfide or Carbonate ore, Roast + use -

Test Amblygonite in flame get a fixed test for Lithium in ore, Newtry Jersey

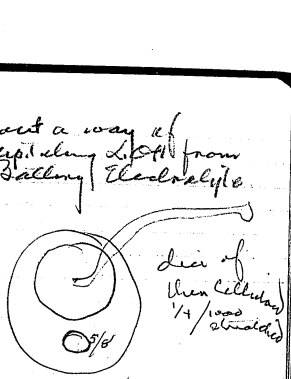
find out if we save old solution for Lithia
also soak out old plates

find out if Regeneration also leaks is an operation if not try get a man

Make a holder for old Sound Tube cards



Find out a way of precipitating $LiOH$ from Old Battery Electrolyte



gradually close holes + turn self cam get it entirely closed then using testing tube try funnel at least at 5/8

Make holder to hold Large listening tube in back glass —

Try small hole listening tubes

Note that reading a 2nd listening tube to top of wood so as lengthens column from 2 1/8 to 3 inches —

Make a brass sliding listening tube for prime tube so it can be turned to prime as well as the loaded column

Make the Manometric flame Receiver — delete the Sensitive flame

Different Precipitations

CuO flakes —

Ground fine, Binders,

NaOH, Silicate Soda, Acetate Lime

Acetate Magnesia, Alum,

Boric acid, $Cu(OH)_2$

$Ni(OH)_2$, Clay, Borax,

$Fe_2O_3.OH$, — Na_2CO_2 - Starch,

see further along

For porosity, Wood fibre sawdust

Perforated paper,

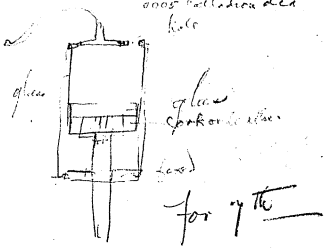
Chloride of Ammonia —

Ground Cork 1/32 mesh

Na Sulphate,

Neo Cell –
Perforated holder filled with Maccaroni pieces –
1/8 × 1/8 – pound full –
Squeezed from a die –

plate to increase the surface



See how small a hole will or can be used on a hysterotomy tube at the jar,

Try PbO_2 Hydroxide
30% graphite – Delaunde –

Put Takaki's friend on Delaunde –

Monochloride Copper
* a Chloride as an Electrolyte ~~X~~ it decomposes NaCl to reduce
Cull to Metal
Cu_2Cl_2 = as it deposits
NaCl better found on Electrolyte
it will not deposit in its sol – KCl also

Make disc Carb Cu
+ vomit till it goes
black should be porous
May want Na_2CO_3

Carb Soda throws down
from Cu salts, Carb Cu
which on heating
turns black

Form pure Cu sulphid
by melting - then
Roast, to CuO if OK
make plate with
NaCl + cast tender
Roast,

Powders CuO plates
Fluorspar
Aluminum hydroxide
Chl Lime 806° C
Fluoride Lime 902-1330
Acetate Cu 240° decomp
$CuCl_2$ 498° C
Fluoride Cu Cu_2F_2 908° C
Iron Salts
Chl Lead 447° C
Monoxide Lead 630° C
Pyrophosphate Lead 806 C
Chl Magnesium 708° C
Fluoride " 908° C
Carb Pot. K_2CO_3 860-898
KCl 740-800° C
Chloride Ka 740° C
Bichrom K 400 C
K Fluoride 789 - 885
Carb Soda 849
Na Sulfate 860-897
$SrCl_2$ 796-854
Zn Acetate 242° C
Zn Carb - 300° C
$ZnCl_2$ 365° C

[121]

St Acetate ~~Ba~~ Iron acetate
Ba acetate " Ni "
Zn fluoride 734°C
Zn Sulfate 400 Dec

Fred Ell – got some Cellulose
Cutter: Cylinder & roof of
Can be open in hot moulds
so walls are even –
& surface smooth –

Have a reinforced plate
made nickeled iron frame
1" mesh for CuO plate
put in Cylinder.

CuOH/2 pump 3% Bismuth
10% Cermm – 20% aluminum
20% ~~Magnesium~~ 1% Silver
20% Zinc
Barium – Calcium –

Possibly can produce CuOH
plates in Crude pyrosulfite
target & oxygen that is any
using Metal to open high
MP.

Find a binder which at
3 or 400 degrees melts
& binds plates together
on Cooling & reaction
NaOH. The CuO dont
need more O of powder
properly burnt in forest
plates, Could heat to 400
600 in iron moulds –

Get a sample of
Lollerkeny made in
Type 0 & C at the National
Carbon Co Cal –

Also ~~send~~ sample of
Cracked plate ~~fine or~~
Large & Curved plates

3 Copper bands around plate see how acts in Sol with Cement,

Holland says his forks gives 517.3. I don't ~~believe~~ it as it don't check with my Columns & way off

McChesney - Pickside plates subject to great heat ~~use~~ discussed here are are making ~~new~~ clearances every time —

Take Holland's 517 - & go in hall way & test all the tunnels for Volume & Vibration of sec clock

See if all Vibrating Scalions of the tunnels same size in diam or dimensions

See if can get some dry Silicate Soda for Carbolic Monolithing of just a little

See if the Blue Cu Sol of NaOH, will plate over from a Copper anode onto a black CuO plate Cathode or Sol strong with Tartaric acid

See if the Copper reduced by Lime can be burnished over black CuO plate, also formaldehyde solution

Silicate Soda + a lime record hardened by the Silicate like Keenans plaster, or powders

How about making plaster Paris from equiled Sulphate lime

Plaster

Sulphate of Cadmium unites by fusion with Chloride of Barium & yields a jorony water liquid which solidifies to a milk white mass —

Sulphate of K & probably Na unaltered Alkali
Magnesia & Sulphur
MP bright red

Sulphate Strontia & Equivalent quantity Carbonate Soda
gives easily fusible mass which on cooling gives white mass Dissg

10 water Sulphate Soda may be used instead by baks to anhydrous Na SO4

2½ oz oil per cell
500 amp hours cell
& others.

No Obs No 3 Cryptolyzed Cu(OH)2 which gave about .80 Vol 100 mil amps 8 hours was not half used up. Weight of reduced metallic about 400 mlg weight of unacted on plate then Cu(OH2) = 1.0230 grams, not more than 2 grams Could hardly be originally been in pocket

	Sol Cold	Hot
$SrSO_4$ —	0.0114	
Sr phosphate	Insol	
Sr Hydroxide	0.41	21.8
Sr " hydrated	0.90	47.71
Na_2SO_4	4.8	42.5
Na Metaphosphate	Insoluble	
Na Antimonate	0.31	—
Ns $2NaSbO_3 - 7aq$ —		
Fluoride Na	4.0	—
Fluosilicate	0.65	2.46
Perborate Na	2.55	3.78
Borate Magnesia	Insoluble	
Calcium Potassium Sulfate	0.25 cold	
Cerit Cerium	0.002	

Above for CuO plate
Cerites -

Rub over plate + burnish the finely reduced Copper.

Try Silvered formaldehyde
Rubbed on by wet cloth -

Try peroxide Mang hydrox.

Use hot plate try Crystals
Hydroxylamin - Paraaminophenol
6/4 - flour Zinc + Rosin -
phos acid + Zn flour moist,
$SnCl_2$

Graphite very light + bleach out with Copper, see if porous - if not run perforating tool over surface.

Can make a stencil

Leaves a plating like this -

+ no graphite shows, can soak out sal - must be neutral

Carb nickel in ammonia in
Excess deposits a green
Crystalline salt on standing
or evaporation, (12) Ni hydroxid

A Crystalline hydrate has
been found on chromic
ore at Chromite Mines Pa
its transparent Emerald
green color & density
of 3.05 This shows
its possible —

If Can get crystalline
hydroxide the test Li Oft
may be unnecessary

Lithia minerals
Petalite Silicate of Al + Li 5%
Spodumene 8% Aluminate
11% Triphyline 3.9%
Lepidolite 3.6%

Its found in sea water, many
Micas + feldspars

L Ott Double ~~phosphate~~
~~of Li + Na very slight sol~~
you may be getting Metal

Hydrofluosilicic acid forms
down almost insol Lifluosilicate
from Li Salts,

Picric acid precips Picrate Li

Hypophosphite Ni Solution
or Crystals heated to 120°C
deposits Nickel

Ag Ag by CuO plate

Amblygonite [illegible]
Powder. [illegible]
fuse with twice weight of lime
Salt.
Na_2CO_3
Sulphate Soda
NaOH, Lillo Rabb.
Fuse three times and to sulfide by
Charcoal at yellow heat.
Fluosponic H_2SO_4 —
Nitric Acid, Aqua Regia

Boils above with Spodumene

Squeeze
36" long
steel 820 about

CuO platte binding —

Borax MP Red heat.
Sol 2.83 Cold 201.4 Boiling

Carbonate Na_2CO_3 —
7.0 Cold 45 Hot.

Fluoride Na 7. —
4.

Acid Hypophosphate
2.2 Cold — 20. Hot.

Oxalate Na $Na_2C_2O_4$
3.

Di Sodium Phosphate. Na_2PO_4 H_2O
6.3 — 286 Hot

Pyrophosphate Na $10H_2O$
5.4 93. Hot

10 Water Sulphite soda
12.16 Cold 412.1 Ref.

Dried -

Dessicated etc & Chucks other specimens fugged & treated by softening in a non floating mount

Fine specimen well washed with a solution of bichromate potash alum sulphite soda & pressed mount & dried in press on Cam Tricotile, Blotting paper etc -

Dilute soda diluted also -

An electrolytic method of preparing CuO is described by Miller J Physical Chem 1909 278 & Luckow Zeitsch Electrochem 1897 422

Proc Roy Soc 1908 -
Chattaway says that by reduction of fuprid ammonium set by chromatic hydrazine Copper mirror deposited on glass

Conc Sol Cupric ammonium deposits Cu hydroxide They would probably on Crystalum tray

CuO_2 perox action of hydrogen perox on Cupric hydrox in neutral at 0° Cent. Crystalline precip is washed with water Alcohol & Ether & dried in Vacuo yellow brown & decomposes at 180°C forming CuO_2

Moulding Lacas - make a thin Varnish, put in Vac let it set & back up by plaster Paris Etc —
also Varnish let it set then pour in plaster Paris -

Vac Bags, Can with plaster
CuO plates in Crucible
Can run in - If no Vac
Can use Vac bags & plates

perhaps cellulose can be treated poly vinyl
when powder dry
Plates, Carnauba, other
Cement paper, fibre

Feculose a starch Ester formed by action Glacial Acetic Ac on starch - washing product with cold water to free it of acid - By varying the starch used & the time & temperature of reaction or concentration of the acid an endless variety of products may be obtained. Differs but little in appearance from ordinary starch. When a little of the sol is dried on glass forms a clear flexible film equal to that of the finest collodion. Used as substitute for gelatine gum &c. Can be varnish made permanent.

Dec Applied Chem 7
489

for hardening Opticians
fused silicates of Na

Hydrothermostasis of K
one of least sol salts of K used as test -

Thermoscopes forms very easily fusible glass with gelatine

Thebel Mould -
fused Silicate of Na
fusing a low temp
pressed hot. for Mosc

5 grams Na Silicate
80# lbs gauge pressure
= 400 lbs dry no
baked 2 hours on hot
plate 20 drops on
kettle at 10" 4 ft rot.
18" —

Various Sulphates Na
broke 10" 1st drop. —

Reg Shake about
same reg. breaks
about Decomp on the
5 grams Silicate Soda

Try Silica, Sand —
Clay — plastic. Dry at
Steam plate + also drill
Red — phosphorus
also dull red,

Silicate Soda 5 grams
Dry in air 24 hours

Silicate Soda Dry in
air in CO_2 gas —

Other Pkg tubes Cost
gas engines on,
also used cond. comm
a thin tube see if other
also use Nitrogen
at one or both ends

Try a bat of Experiments to see
what would slag CaOH to
a compound insol in NaOH

If Silicate Na Coats the
granules, use less of it
say 2½ grams per 100
max batch —

C14U

Run 5% selenite Na up to dull Red
also 2½% of Copper
+ test in battery -

Try mush of Cupric hydroxide, rather stiff baked to hot plate also 400 & also dull red

Try Cupric Ammonium to wet,

Try Acetate Copper + dry hot plate 400 & dull red

Try Silicate Copper

Fluoride Soda & Cu

Dally - after a few more experiments on Coating go back to Vermicelli flock powder & make discs - We get best results from these -

---

$Zn(OH)_2$ in solun KOH but not after ignition make plate with $Zn(OH)_2$ & dry steam plate 400 & ignite + test

---

Try ferrous hydroxide in black it greasy ferric a peculiarly bend

Try phosphoric Boric acid on coke form
Also Also Borate Cu
Probably not sol in NaOH,

In Coke Experiments make a
funnel for smallest Same
Taper so the mouth is
Equal to dia of the
Largest Tube –

Sol. of Zinc dust Cost with
NaOH with Copper Neg
plates, if so dip in
mush of Zinc in NaOH

LiOH, Neutralize the
Electrolyte with CO_2 +
Evap to dry then dissolve

the Na_2CO_3 by hot water,

Also neutralizing by HCl.
Evap + dissolve out
the $LiCl_2$ by alcohol
or Ether — $NaCo_3$ solubleol

Carb Li Li_2CO_3 anhyd
Sol 1.5 – 100 cold 0.78 hot.

Li Sulphate Only sol alcohol
Na " " " Insol –
the water "

Experiment of Fire crack iron
75% CuO burnt powder +
25% $Cu(OH)_2$ Colloid.
freely dry powder wet
Clay is intended the Mixture
Mix 4 moulded + baken
till OK –

C145]

Dammar, fine powder
& equivalent to 12% binder
using alcohol to varnish
block put on block a
day in oven. Represses in
mould & then Reg
Varnish.

Dry Cu(O) plate a Chlorinating
~~bat~~ Hot plate. Hot &
dull red —/

ZnO boiled with a strong sol
of ZnCl in certain proportions
after a while a plastic mass
is obtained which (for a
while becomes very hard
& is used for taking casts

A cement 3 pts ZnO & 1
part powdered glass to
50 pts of a solution of
ZnCl Spec G 1.5 @ 1.6 and
with 1 pt Borax dissolved in
sufficient amount water
is used in Paris for stopping
teeth

An oxychl prepared by a
similar process may be
used as a paint for wood
paper or stone dries
equivalently —

See how much Zinc
NaOH will dissolve
hot. Use the Conc
sol + feed with ZnO(A)

Call Bernardaki on
phone ~~for~~ Salesman
Come over

See how much Cu OH 2 can be got into NaOH strong heated on small Casserole + if Evap to dry if it dissolves in 20%

ditto Metallic Aluminum in NaOH & to dry —

See if strong hot strong NaOH will dissolve oxides of Al — Ca Ba Sr Cu Fe Mg Mn Zn + if so dry given if Sol in 20% NaOH.

Try strong NaOH, 6 ounces dry on hot plate make 2 + 2 more to 6 2 heated bright red —

Dimroddie —
Use Manilla + dissolve in High BP Solvent Naptha, see if sol in hot Straw oil

Dykeman — Dont consider any Metal Contracts —

Ammonia phosphate precips Mn to a Soluble Double Salt,

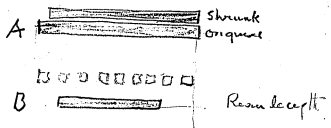
Soak one of the Silicate Na Cu bricks in Chl Calcium + percolate wet the NaCl. dry see if its as strong as silicate alone if So Copper + Run

7/29

Shellac dissolves in ammonia

Temp Hot plate
266 – about

Dimoddie.



If A shrinks say $\frac{1}{16}$ then if B with a carefully reduced length of resin, hope to shrink $\frac{1}{16}$ it certainly will crack

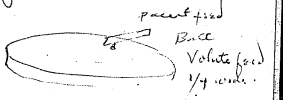
Remedy more Var less 7/x or better, dont harden so much in press, so it will stretch more

2nd = mixed 12 min hrs
2 3 + 5 min –

3rd Use less 6/4 –

4th use same 6/4 and add more free phenol,

Think it will not cut as 75% of surface is 7/x –



6 = Take record out warm

Make Var 1% Para phenol free
Resin same Vary 6/4 –
from 7.9 7 6.15 5 or 4
1% – Blanc 7/x consistent,

Varnish one coat + cure Reg bake – over this put 2 coats Blanc fix reg V without shrink or blacks
Rebake in press
(151)

or. one coat on blanks & bake to 140 in oven down stairs – & then the 2 coats of fix –

Several blanks, using less & less blanc fix –

See if our China melts or softens by heat, if not or only softens substitute it for blanc fix for a trial

Specc Gravities

Sul Barytà	4.4
Aluminum Trifluoride	4.3
" Trioxide	5.5
" Sulfate	4.9
" Pentasulfide	4.1 fusible
Barium Chromate	4.5
" Manganate	4.8
" Oxide	5.3

Bismuth	Oxychloride	7.7
Cadmium	Oxide	4.2
"	fluoride	6.6
"	Hydroxide	4.8
"	Oxide	6.95
Ceric	Ox	7.65
Copper	Oxide CuO	6.3
~~Iron~~	" Cu_2O	6.0
Iron	Fe_2O_3	5.1
Lead	Borate	5.5
"	Bromide	6.5
	Carb	6.4
	Chloride	5.8
	Chromate	6.1
	fluoride	8.2
	Hydroxide	7.6
	Oxalate	5.0
	Monoxide	9.3
	Red	9.0
	Peroxide	8.9
	Oxychloride	7.2
	Sulphate	6.2
	Sulfide	7.1

Tin	fluoride	4.7
"	oxide	6.7
Zinc	fluoride	4.6
"	ox	5.7

~~Try Chromic Wrap's idea also dissolved with Chrome Fix + a rapid dryer put in oven — dry + print without Reg Vars + also weight~~

Boil a Silicate in water also 20% NaOH also just enough acid to neutralize to decomp the Silicate +

Put 6 2½" discs CuO 100 - 5 - Silicate Na in 20% NaOH, in a jar closed to air, at end of 2 weeks clamp after soaking NaOH and half a load to break the other in at end of month break another, then let 2 months after steal flange + break another + so on. Make an extra one to break at once after 2 hours in NaOH. Bake 27°

Then 6 baked to 400 — 6 baked to 600 —

Evaporate Reg silicate in dish + after oven to 266 on hot plate for 2 hours put in 20% NaOH and how long did dry

No 2 disc if as good as Reg plates
581 ~~0~~# 1 amp- should give
687 amp hours. to 1/2 Volt.
Surface is 7.23 times less hence
at 200 m/amp is equal to
1.400 on Reg plates,

Make CuO disc with fine
ground Portland Cement
ditto plaster paris -

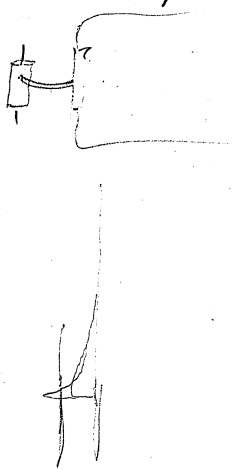
Try 5 4 + 3%
Clay test drop + electric

Make a 1 + 5 Sol Na
+ subject to CO_2 + test
strength after 24 hours
drop + water, etc

Bake 5 Sol Na to
300 400 500 -
+ test in water -
+ Elec

Kangaroo
Yak
Mongoose
Man
Ocelot
Porcupine -
Jakal
Jaguar

41 f.s



C161]

Kg. Dyphocus
Megamantheim
Obari
Iguanna
Gilamonster
Chamelion
Crocodile
Alligator
Caymen
Tasmanian Devil
Gazzele
Hartbeast
Eland
~~Bison~~
Water Buffalo
Chamois
Ass
Mule
Lynx
Hyena
Panther
Wildcat
Lion
Tiger

Leopard
Puma
Monkey
Baboon
Gorilla
Cheetah
Skunk
Rabbit
Panarie Dog
Lemur
Squirrel
Rat
Mink
Otter
Beaver
Fox
Wolverene
Horse
Cow
~~Buffalo~~
Cat.
Mouse
Chipmunk

Squirrel
Llama
Elephant
Camel.
Goat
Sheep.
Raccoon
Muskrat,
groundhog
Hog-
~~Pig~~,
Weasel-
Possum-
Sable
Whale
Walrus
Sealion
Seal
Manatee
porpoise
60

50

Caribou
Elk
Moose
Antelope
Elk
Bear
Muck of
Armadillo
Ant Eater
Wolf
Dog
Badger
Rhinoceros
Hippotomiro
Chimpanzee
Orang Outang
82
Zebra
Giraffe-

550
550
2750
2750
3025

302.5
250

486
109

350
77
2450
2450
2695

28500
77
199500
199500
21945
20000
19430

168
9
5 | 1000
49
288
32
320

2700
360
162000
8100
2000 | 97200
81000
17200
16000
1200

(486

7.7
400
308

3080

62
77
434
434
5774

58

256 | 12000 (46.9
1024
1760
1536
2240

4 | 46.9
2 | 11.7
5.8

3080
360
184800
9240
2000 | 110880
100000
10880

(550

Notebook Series -- Pocket Notebooks
Notebook, PN-18-09-10.2

This pocket notebook, which covers the period September-October 1918, was used by Edison concurrently with PN-18-09-10.1. The entries in this book pertain primarily to war-related experiments conducted in the garage at Glenmont, Edison's home in Llewellyn Park, New Jersey; at the U.S. Naval Experiment Station in New London, Connecticut; and possibly at other locations on Long Island Sound. Included are notes on sound detection devices and other means of locating submarines. Also included are notes on camouflaging, poison gases, smoke generation, and the penetration of machine gun bullets. In addition, there are comments about the "possible source of noises on Cargo boats" and "possible means of detecting German 2 Knot noiseless subs," along with other remarks about underwater acoustics. A few of the entries relate to the production of disc records. Pinned into the front of the book is a letter of introduction from Secretary of the Navy Josephus Daniels, addressed to the "Commandants of Navy Yards." Among the employees mentioned in the book are experimenters James M. Burns, John A. Hanley, William A. Hayes, and Paul D. Payne, as well as Edison's assistants Charles B. Hanford and William H. Meadowcroft. The front cover is marked "War." The pages are unnumbered. Approximately 150 pages have been used.

[ITEM(S) FOUND IN BOOK]

IN REPLY ADDRESS
THE SECRETARY OF THE NAVY
AND REFER TO No.
O-Lu

NAVY DEPARTMENT
WASHINGTON

September 26,1918.

To: Commandants of Navy Yards.

This will introduce Mr. Thomas A. Edison of Orange, N.J., who desires to visit the navy yards in connection with his experiments. Please afford Mr. Edison such opportunities as he may desire in connection with experiments he has under consideration, and extend to him such other courtesies as may be consistent and practicable.

Josephus Daniels

Secretary of the Navy.

Sept 10 1918

Possible source of noises on Cargo boats

1 = Engines or shaft
2 Circulating Pumps
3 Boiler Pumps
4 Ventilating fans
5 Dynamos
6 Walking about
7 Water moving in boiler, bilge
8 Wireless
9 Propellers from boat under coaler
10 Cables or guys vibrating
11 Waves striking boat
12 Eddies made by screw
13 Bilge keel
14 Perforated Strainers
15 Bow waves
16 Vibration of pipes
17 Noises from the Ocean
18 Rudder shaft loose on sleeves
19 Intermittent stresses in main shaft
20 Vacuum Pumps

21 Water hammer in pipes.
22 Loose doors windows & pieces
23 Handling Coal

Musical notes of different pitches are audible for distances [illegible] inversely as the square root [illegible]

Speed of sound in pipes filled [illegible] water

Diam.	Thickness of shell	Metres per second
.720	.032	998
.468	025	1046
.338	020.8	1164
.600	080	1213
.400	080	1281

Continental Telegraph Charges.

C	—·—	Y	—·——
F	··—··	Z	——··
J	·———	1	·———
L	·—··	2	··———
O	———	3	···——
P	·——·	4	····—
Q	——·—	5	·····
R	·—··	6	—····
X	—··—	7	——···
		8	———··
		9	————·
		0	—————

Experiment on Magnesia paint for Camouflage

Penetration steel plate machine gun bullet

50 ft	.52	of inch
300	.40	"
600	.30	"
900	.21	
1200	.19	
1500	.10	
1800	.07	
2100	.04	
2400	.03	
2700	.02	
3000	00	

Hanley listening

New London Experiment Listening boat still
Sub running 385 ft min Counting Cocos.
3/4 up. Smooth water no boats in
sight. 5775 Yards limit
direct listening 2.88 Nautical
Miles – Sub 3.88 Knots hour Rev 138@140
When listening boat out in Ocean & rolling
Could only hear to 2438 yrds 1.215
Nautical miles, waves 2 @ 2½ ft white caps

Condensite Co –

Infusible Condensite
110 Denat Alcohol
100 Resin
15 6/4 – to harden use 5 Para

See if formaldehyde combines
with Paraphenylenediamine –
its a base

Run Varnish Experiment Req
formula leave out Sandrac
Use 5 7 10 15% Para
bake No 2 schedule
with best all round % flock
blank – also 6% Para + Op 11 + 15
6/4 –

Varnish with Req 6/4 &
Enough Paraphenylenediamine
Hydrochloride to Cause the
Acid to Combine with the
free Nitrogen gas

Also Expmts with Ammonia Lampblack to color)

Try expmnt of adding Diphenylamine Paraphenylenediamine + other reducing agts ref in Melted Resin to keep it from oxidizing

Expt to Trim Edges of record by grinding with Carborundum wheel + previously forming them dry + also by a Electrically heated Knife or wire or by a rapidly Revolving wheel kept very hot

In making blank use water jacketed plate + Removable top so moment blank is made to set on plate + top put on to cool it flat

ditto Multiple + Lettuce 140° Falls
try Rolling Band Lemke

Expt on Sawing cold gobs, hot gobs Shearing gobs.

Expt on an Auto Varnishing Machine.

Expt get rid of oxidation of gobs

Arrange cages to put new records for time tests, on shelves.

Run wear tests when get good record. Reg. also wear tests on high pers + also high b/p — + put these away for time tests,

War gases – Nickel Carbonyl
Hydrofluoric – Sulphuric Formic
Trichloracetic – Cacodyl + Cy of C

" ——— Dichlorethylsulphide

Gases used
Dichlorethylsulfide,
Chloropicrin
Phosgene,
Diphosgene
Bromobenzylcyanide
Diphenylchloroarsine,
Butylmercaptan
Stannic Chloride
Silicontetrachloride
Prussic Acid,
Ethyldichloroarsine,
Phenyldichloroarsine
Chloride of phenylcarbylamine
Bromomethylketone
Chloroformate of Dichloromethyl
Oleum 60% H_2SO_4 + HCl –

Mustardgas Allylic sulfocyanate
Roller feed 5" tin chimney
3/4 lb Chalk 15 seconds
good smoke –
China Clay

Another man says recommend
gases as Dichlorodiethylsulphide
Bromine
Chloroacetone
Chlorosulphonic acid.
Dimethylsulphate

Try electrifying the Chalk etc
+ pepes or stuff used
Stay up:

Mustard gas is intoxicated to a resin

Ethylenic Sulfocyanate
attacks Eyes strongly
Excites violent sneezing
is a solid + probably
not available

Silicic Ethers

Ethylsilicic Ethi – Tetra Silicate
Liquid S.G. 0.933
B.P. 166 burns with a
dazzling flame depositing
a white smoke of Silica
in an extremely fine state
of division – H_2O slowly
decomp. it to Silicic acid

Silica
Fairly cheap

Silicohydric Chloride
$3SiCl_2 . 4HCl$ made by
passing HCl gas over over
metallic Silicon heated to barely
visible redness.
Colorless very mobile liquid
S.P. 1.65 B.P. 42° C.
fumes strongly when exposed
to air smoke deposits white
film on surrounding objects
irritate suffocating odor,
highly inflammable burns
green fairly luminous flame
depositing Silica
Vapor mixed with O
Explodes violently by spark

Silicofluoric Acid
fumes in air

Silicuretted Hydrogen
Cheap – easily in an excess of
white chloride silicon

If gas is passed into air
Each bubble explodes fore
spontaneously with
Explosion giving dense smoke
rings

Succinic Chloride
Strongly fuming liquid
BP 190° C

Dichloroacetic acid
suffocating odor Very
Corrosive

Ethyl-Benzyl-1 Dichloride
Extremely pungent odor
BP 214

Monobromoacetic Bromide
Liquid BP 150. fumes strongly in
air, attacks mucous membranes of
nose & bronchial tubes & produces
deep wounds when placed on
skin. its vapor instantly
destroys cork stoppers

Chloroacetic Bromide
Lacrymatory fumes

Ethylene dibromide
Copious fumes of Fumes

Dichlorobenzyl sulfonic
in closed flasks acc of
heated it, will give
a smoke —

Benzyl sulphocyanide
Powerful odour

Methyl Isocyanide or
Methyl-Carbamine
Mobile ~~sol~~ liquid SG 0.755
BP 59 – Very powerful
odour. Vapors are acrid
& very delicious, almost
instantly producing Nausea
Vertigo headache & depression

phenyl Isocyanide –
not nearly as strong
but cheap to make

Ethyl Formate
Extremely irritating
Vapor BP 82. SP. 932

Amyl Nitrite

Ethylsulphocarbimide,
Tears Exciting, burning pain
when on skin BP 134
Vap D. 3.03 SG same as
water

Bromoacetylene takes
fire at ordinary Temp in
the air, if mixed with
Coal gas mainly indifferent
gas. Likely to explode
strongly heated in Contact
in Contact with the air
forming white vapors of
Bromacetic acid –

Acridine, Cheap from
Crude anthracene
MP 107 - when inhaled as
dust Causes sneezing &
Coughing -

Dibromo aldehyde
needles, Sol water, alcohol
+ Ether, pungent tear exciting
Cheap Easy

Monochloro aldehyde
Cheap. Easy
Crystals Clove oil
pungent gives vapor
attacks Mucous membrane
attacks skin not seen or
felt at first but in
time cuticle peels off

Benzyl isocyanate
Liquid - Excessively pungent
odour + its vapor causes
Eyes to smart painfully
BP 175 @ 250

Sulphocarbonyl Chloride
also
Perchloromethyl Mercaptan
pungent tear exciting.

Active principle of
Smart weed - qct sense

Trichloro crotonic acid
very caustic destroys
the skin - liquid

Crotonic Chloralhydrate
very sol alcohol
MP 74. vapor powerfully
attacks mucus membranes
Eyes
Chemically made from Chlor
into aldehyde

Methylene Acetochloride
pleasant smelling suffocating
odour liquid BP 120
591.19 cheap

Bromopropylic Ether
liquid BP 172
burns a green flame
fumes of Boric acid

Torpedo 50 ft sec
Cargo boat at 10 knots
16.66 ft sec
for every yard torpedoes
go cargo boat yards
(Especially 1 foot)

Arsenious Dichlorophenide or
Phenyl-dichloroarsenide
liquid fumes in air
Only chlorine small pd
Gas is very corrosive
action on the skin [illegible]

Arsenic Oxychlorophenide
$C_6H_5AsOCl_2$ solid but
fumes in air

Propyl Chlorocarbonate
BP 90@160-Mean 125
Pungent vapors strongly alkaline
Vapors made by mixing hydrogen gas

For secret wireless use so high a note Bell Repeater will not make it audible
use Cl alk lo Cofano

Moved a 3" sharpnell
Shell and my new Clock
[illegible] use large quantity
Wood fibre

See Rudy about 2 shoot[illegible]
[illegible] also double
tube, till at Garrage
Blandelion,

Carbonyl-thioethyl Chloride
$CO(SC_2H_5)Cl$
Tear exciting liquid

Titanium dichloride
Acid when touched
with a drop of water
Catches fire

In trying the 56 ft of tube
at Garrage. Try the cap
on end, also the cap + a
deep 6" dia to deflect
+ Concentrate to build
up to greater intensity

Try Taper 6" long leading
to Stethoscope,

Try Metallic sections
of tube using instead of
Rubber for Stethoscope

Fred. H. Cut out a cylinder
from the Chronicle
for Mark Cellophane —

phenylmonochloromethyl ether
Chloromethylether
MP 97 — Meyer pap 1341
Sublimes without decomp
Fuming in air when boiling
with water strongly irritating
Mucous membrane & eyes
Solution burns the skin
Violently. 3rd Sup under
acetone — p 5
Very [illegible]

Dibromacetic acid
Crystals not affected by
Vapor strongly irritating
Mucous membrane BP 232

Bromacetic acid
Crystals — dec H_2O. MP 130
Boils 250. water, when dry
may be touched with impunity
but if moist produces
violent inflammation of the
skin —

Mono bromacetone
liquid Very irritating smell

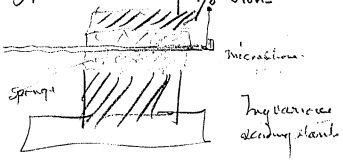
Acrolein

β-Bromacrylic acid. Solid
[illegible]
blisters the skin

Methyl — Ethyl Bromacrylate
Bromide, Vapor attacks
mucous membrane

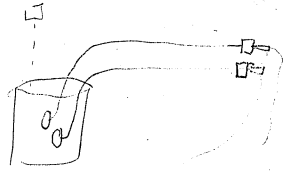
Chloroethylene
Only liquid
BP 217 - 1 attacks
Rubber strongly
acts as a nerve poison
3rd Sup p 452.

No 12 wire say 1/8 iron



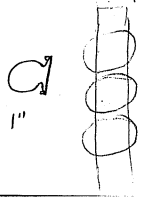
Vibrator at other end located by a key — lay on ground

1000 ft long - 4 ok
go to limit

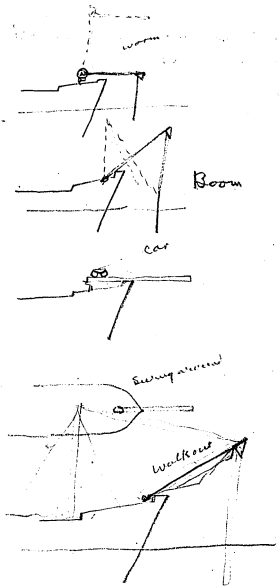


Water drop 2 tubes 2
dia 4 2 telegraphs -
Series & multiple with
audion -

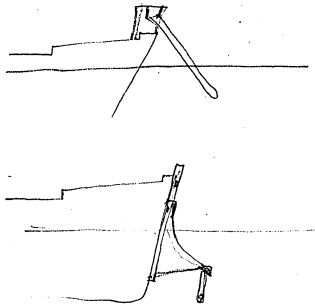
Get a good 4 o large
also



Make diaphragm 1"
4 6 of them



Connect listen rudder on a swivel so it's that way always —



Monochloroacetone solution
3 cells Bunsen test on mixture
HCl & Acetone - only liquid
BP 117 SG 1.14
Vapor acts strongly on nose &
eyes. produces copious flow of
tears — Vapor density 3.4

Dichloroacetone by preparing
Chloroform - only liquid
BP 116.5 SG 1.331.
Smells like chloroform at 1st
but after few seconds attacks
nose & eyes with violence
liquid blisters skin like
Cantharides making
wounds difficult to heal
Vapor density 3.2
insol water,

tetrachloroacetone only liquid
Very soluble pungent
liquid blisters skin
when exposed moist air
forms Crystals sol water
The chlorp ketones act like acetone

Bromoacetone produced
same way as Monochloro
attack Eyes so strongly
Spilling few drops renders
air of room unendurable

Chloride of Acetyl
BP 55° Vapor attacks
Eyes & respiratory organs
strongly – Decomp by
water violently yields
acetic & HCl – n.f.

Acrolein oxidizing Energy –
BP 52.4 Vap density 1.897
Lighter than water few drops
in room renders it now
unsupportable drop in
40 cts water, Cant be
kept long

Amyl Sulphide,
intolerable odour

Chloride of Arsenic
Oil – BP 132, V Evaps in air
at ordinary temp producing
white fumes, its highly
poisonous

Arsenic Fluoride
4 times heavier than
air, produces painful
wounds BP 63
fumes strongly in air
at ord temp

Arsenuretted Hydrogen Gas
dangerous, Element Killed

Can be made by dissolving
Zn, Sn or Fe in aqueous Arsenic
acid, Cover put in shell
+ close it + fire after pressure
has arisen to 500 lbs say
No danger to Makers.

or electrolysis Arsenic acid
to proper pressure

Being a gas not solid
water or bombing with
acids, a large number of
shells would make a
bad for certain areas

Liquefies at 30°
below 0 gives
Spec of 2.695
when largely diluted produces

Nausea, giddiness & oppression

Arsenuretted
Oil – BP 133° does not
fume in air nor dissolve by
water but dissolves freely in it
Vapor exerts a most violent
action on human membranes
on smelling it the eyes nose
eyelids fill up
speedily lacrimating
pains extending down to
the throat –

Blowing air over 60%
alcohol heated 8 minutes
good – nozzle 1/8 dia
smoke 6 ft long cone
outer end 3 ft dia

Fluoride of Boron – smoke

Fluoroboric acid Oil like H_2SO_4 – fumes in air – smoke highly Caustic. Cheap

Borate of Ethyl Cheap. Mobile liquid burns & gives off smoke. Vap Den 5.14

Biborate Ethyl Thick liquid gives off white fumes at 200°

Vapor of thionol one like formaldehyde in smell ~~[illegible]~~ + HCl. burning in wet tinder make smoke

Aniline detto

Vapors of SO_2 + aniline. also HCl + vapors of aniline

~~Cyanic Acid – [illegible]~~

Cyanate of Ethyl Liquid BP 82 Intensely Tear Exciting Vap D 3.04

detto Cyanate of Ethyl " " Methyl

highly valuable Tear Exciting Choking Vapor BP 90

Cyanate of phenyl

Cyanide of Ethyl Cheap Solid BP 82 Very poisonous Liquid

Bromide of Cyanogen
Melts +4°C Vap D 3.67
Volatilizes at 15.C
Vapor very pungent odor
Excites Copious flow of tears
1 gram dis in H_2O &
poured into wound Lungs
of Rabbit killed it
instantly

Chloride Cyanogen
gas. intolerable odor
Excites Copious flow tear
SG 2.524, at 4 atmos
Condenses to liquid
Absorbed dry 100 Volumes
of gas Extremely poisonous
a great Care must be
taken to prevent it
getting in the air where
people live

Dichlorocarbide of Ethylene
Liquid pungent like horse radish
raises blisters on the skin
Even the vapor destroys the
epidermis on more tender parts
Insoluble in water SG 1.4

Fluoride of Benzoyl.
very irritating vapors -
liquid, oil - BP 161.5

Formic acid - Ulcers

Sulphurous Acid + Aldehydes
blown to pieces make a
smoke.

Trichloromethyl chloroformate
Very poisonous, used by germans

Germans issue a Sneeze Bomb with the
melted TNT -

Make Silicates of Ba Sr Mg
Cu Zn Sn + Sb As Pb Mn
Fe Li Al for Chalks -

Stannic Chl fumes strongly
highly Caustic

Try Vapor Arsenic &
Sulphurous acid from
burning sulphur
distill Arsenic +
CO_2 from Chalk & acid
for smoke -

Try if Bromine Chloroform
Vapour gives smoke
with Ammonia
We got a lot from Tommy

Distill Naphthalin
in draught of air -
also other cheap solid
distilling at low temp

Dissolve Naphthalin in
the best Very Volatile
Solvent, not Explosive
the Solvent Evaps +
leaves Nap in air -

Distill Stearic acid
with hot air -

Consider Use in flame
when hot should
smoke -

Periscope from deck to oil burner leaker in hole to regulator no smoke

Stearic acid is good tried it. Very fine

Naphthalene smoke seems to disappear quick and not near as good as Stearic its fine

Resinate of Magnet in iron dish ~~[illegible]~~ red hot coal nearly. gave off smoke in considerable quantity for 15 min using nearly about ONE Gram this is remarkable - [illegible] White Blue black Cast from furnace

it kept burning almost to the end & apparently the MgO all went out -

2 grms poor Chloride Aluminum gives lots smoke in heated cup for 4 minutes - Very good smoke, practical

Stannic Chloride about 2 grams wet gave off a fair smoke for over 25 minutes - This seems for per gram the greatest smoke - $AlCl_3$ gives off 2 or 3 times more vol but only 4 minutes - Think if $SnCl_4$ were anhydrous it would give off much more as there was quite a residue - it seems [illegible] Cranmer heart of Oak Rod at Lecom -

Buy some of def Chloride of Antimony –

Pentachloride Sb treated with ammonia – a solid I found in Cans Makes a very white smoke + large quantity thereof but less than 2 grams. smoke is 2 to 3 times more than $SnCl_4$ 1 ft minutes getting then it burns only a little powder on bottom of dish 5 mlg –

Solid Chloride of ammonium White smoke good volume Vol equals $AlCl_3$ – about 2 gm or less, after 3 min poor Vol quickly thereafter all gone not good product for the money

Try Sulphate of ammonia also NaOH

Oxybromide of lead on heating to fusion gives off dense white fumes

Heating lead oxychloride gives fumes

Boric Methide gas. at 10°C under 3 atmos Condenses to liquid takes fire spontaneously when touches air – If if air tube to work dia the amount of smoke is surprisingly voluminous

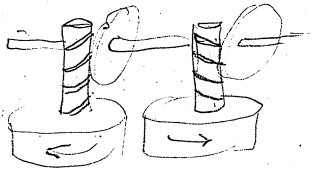
3 Cubic inches of gas fills a capacious room

Carbonyl Nickel Condenses with Nickel – this is a solid that completely volatilizes

The vapor is very inflammable
Not affected by Oxygen at
any temp - forms below 100 c

Dichloromethylchloride
a small quantity spread
out on a surface soon fills
the room with suffocating
vapors of Phosgene
+ sulphurous gas
Sulphur dioxide Watts Dic
p558-9

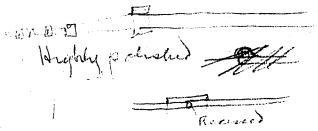
Try if Benzene sulphonic
heated in Cup gives
smoke



Payne

Stethoscope -
Pneumatic End or bell to
make it soft on ear + close
it

pneumatic, Rubber

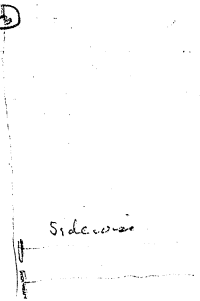


X Sect

Keeper together
dowel,

Lex pointing
to Earth, & also up

also



Close together & independent

Steam Chuck closed
by spring & by
Night pressure
See if Rubber ring in

Soak some (lump) of Mg Si in Alcohol + dry

Sound = Paper
Directly to their length
if dia is doubled loss is
1/2 if pressure of sound
waves is doubled the
loss is doubled

Diphenyloxamide
Crystals melts at 320 +
gives off unreducent fumes
by sublimation under
Oxamide - Reg Watts 286
Insol H_2O

Benzoic acid sublimes
insol Water
Ditto Salicylic acid

Try I gram of all the
Organics in Case for smoke

Silicic Ethers

Ethylsilicate Ether, Liquid
BP 165.166 - its combustible
burns with dazzling
flame depositing a white
Quite infusible in a state
of Extreme minute division
insol in Water
Ether is the Tetraethylic Silicate

Iso-Sulph acetone
BP 183 @ 185
VD 5.08 - Vapour attacks
eyes strongly, burning
sensation Inhalation

(5)

Monochloallyl sulphocyanide
pungent smell like mustard
gas

Mercury compounds of Allyl
these irritate the skin
but not perceptible for several
hours then painful
blisters appear

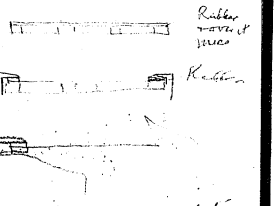
Chloropicrin
(Trichloronitromethane)

It has a more violent action
on the respiratory mucous membrane
than either Chlorine or Bromine
fumes. Causing suffocation
vomiting & tears.
Cheap. action Ca hypochlorite
dry & picric acid.
or by decomposition
of chloroform 3rd Eng
328

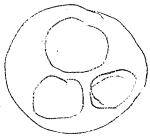
Find best solid solvent for
Wax gases & vapor that they
absorb all the gas instead
of charcoal

Try an experiment say of
passing alcohol vapor
1/8" bumps of Rosin in
long tube & see if any gas
stuck.

Kayes



+ Rubber 1 inch side no plate
.005 T .002 mica



use this then

Logging of gasoline tanks
Carburetors are intake –
Chinese food warmed loggy
also for above fact of
Aviators

Make lot of Mg hydroxide Chalk
also CuO see if he uses
precipitated CuO if not try some
Silicate Mg.
Then try all the different
pens, especially the small
ones. When get best try
all kinds diaphragms
built up etc. – Then KOH, LiOH,
NaOH, in different concentrations.

Try 2 Chalk & Chromes in
Optics,
~~Then Microfine Tetrazen~~

Best chalks – make at high pressure
soak & wet smooth before burning –

Strontia Carbonate	30
" Oxalate	38
Calcium Oxalate	32
" Silicate	34 @ 36
Black Stannous Ox.	28 @ 30
Copper oxide	32
Magnesium Fluoride	24
" Hydroxy –	24

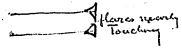
Britton Secy of Daniels –

Look up the one that was weak on Zero & not much weaker at 20, this has high Res & under pollendum Condr to be used & it might be very sensitive as Could double the frequency

Built up diaphrm built up
Must be made so pull of
Lower Compressers sections
get some Condensers & Quad Res
boxes – when new books made

Weather – Quite Calm very little wind
Sept 23 1919.
1/2" moth tubes brass 50 ft long set on
rubber sponges – Cup on end but no Dia

Really 7/16



with Stethoscope old style 1 tube hear
to 330 ft, other Tube 330. both act
alike –

With Listening tubes seperate & using
both tubes simultaneously hear to
470 ft

Then with stethoscope old style
Connected to a single tube by a
Tapering tube

heard to 375

with two tapers & two seperate listening
tubes & 2 brass tubes

heard to 500 ft

With the sound boxes seperated
3" can hear to 485 ft a loss of 15 ft
Seperated 6" hear to 475 ft " 75 ft
" 12 " 375 " 125
" 24 " 340 " 160

O Sub

arranged at right angles to source of
Sound hear to 275 ft.

arranged lines hear to 260 ft
if twined towards ground hear to 250 ft
twined to sky hear to 250 ft
Sub

X placed plate 1 ft sqr 1/4"
thick 2 inches away in front of
tube boxes hear to 260 ft
when holes bored in plate so boxes
flush with plate hear to 500 ft

Listened to sub through air hear
to 550 ft.

We now tried diaphrams in boxes on
tubes using old Gothscopes single
tube, Mica .001 heard 300 ft

1/2" tube	0015	300
	002	300
7/16 tube	003	280
	004	260
	005	235
	006	210
	009	190

Listened thru 2 tubes with
.002 Mica in each hear
to 500 ft.

We now try single tube 3/4 inch inside dia, the 1/2" tube was outside dia giving only 7/16 inside dia.

50 ft. using taper heading from 7/16 tube on bound box to 3/4 tube + also taper to a bell

Stethoscope

Hear to 515 ft with single 3/4 tube as against 330 ft with 7/16 tube

With 2 3/4" tubes hear to 600 ft not quite so quiet as yesterday

Experiments 7/16 1/2 tubing 7 lengths each 14 ft long - Taper at listening end + rubber stethoscope tubes, Rag Cup - Quiet day (very) no wind.

98 ft hear	258 ft	general loss of 1.4 ft per 7/16 tube
84 "	273	
70	288	
56	298	
42	325	
28	350	
14	400	

See next page

Wanted for other experiments

loss of a bout 4 yards at sea per foot of 7/16" tubing -

14 ft.	sqr of 400 ft	160 M
28	" 350	1.31
42	" 325	1.52
56	" 298	1.79
70	" 288	1.92
84	" 273	2.16
98	" 258	2.42

At new London, dead calm heard Sub 5775 yards 3.28 land miles -

Rolling boat rough water, 2 ft + white Cap heard 2438 yards 1.38 land miles 5.6 Tower London

As the deck must be at an angle of 18° to fire a Torpedo, no matter what distance from a 10 Knot Boat, then the present diaphm being parallel to direction of Cargo Boat its efficiency will never exceed or fall below 80%
If Diaphm could be at the angle of 18% then efficiency would be 100%

Use ~~about~~ from infusion + paint surface with Strontium Oxalic yellow while burning to see if a track remains by the Sr Oxal will be as good as if all made of Sr Ox

test all the pens,

XX

Also tried 2 soft lengths of 3/4" hose without the 1/2" extension to get second 6 ox hose out around 60x to 3/4 - got 630 ft instead of 600 - perhaps some of this due to very quiet day at same time to check, tried 50 ft 1/2 paper wing taper at 2 lethers ofay got 275 ft - this had no sound 6 ox on (should have got 330, perhaps some) 6 ox ~~does not~~

Take 1 gram Condensite Carbon heat to 350° fahr ~~then~~ weigh hot then while hot expose it to Ammonia Vapor till Cold then weigh — no smoke

Hayes

Reg Taper

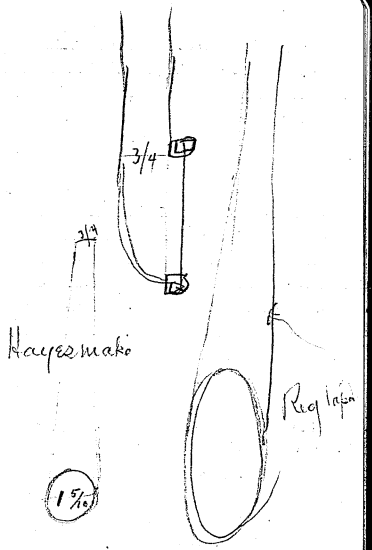
Make this of other simple taper works

Burns have another Sub made exactly alike the one we have with light lever for 300 ft with 3/4 tubes (2) & 3/4" Sound box opening & Experiment 60 drops min & 140 drops to find out degree of disturbance under all Conditions & how it affects distance one can hear faster Sub -

Experiment with one Sub going away off & approach steel ft that it is unmistakably detected

Don't forget this point

Important.



Hayes when you made test of putting sound boxes 3 6 12 & 24" apart did you put the whole length of tube 24" apart or how (angled them)

The explanation why men in sub running under with motor could hear the intermittency of sound of main shaft is due to powerful Echoes which serves to make sound Continuous & a very low hum although very powerful to those at a distance.

Ask Hayes if he took any of the phonograph records running out merely of horn regardless to sound of sound, Most all of them. had to put horn very close

See what liquid is best for etching glass use for smoke shell for etching glass of Periscopes

Electrolytic oxygen by Kott & Nickel plates to supply what is lost by rarefied atmosphere requires at Demand of

1 mile high	·3
2 "	·46
3	·63
4	·775
5	·9

Lutining Chemicals
Dibromethylbrassa
Quinone 2. 3
Para Dinitrobenzol
Diphenol (y)
Hydroquinone
Phthalic Acid 2
Meta Iso Phthalic acid
Isonicotinic acid
Meta aldehyde
Aligerine
Quinoline 5 also 6
Oxalic acid
Pentabromobenzol
Amarion
Amino-Anthraquinone
Ortho Benzoic acid
" Amino phenol
Azo naphthalene (aa)
Ortho Azophenol
Borneol
Ortho-Bromobenzoic acid
Carbanilid

Carbostyril
Cuminic acid
Cyanogen Sulphide

Bromide of Ammonia
Carbamate "
Thiocarbonate "
Arsenious Oxide
Chromic Chloride H_2O-6
Cobaltic + ous Chloride
Selenide of Hg
Mercurous Chloride
Molybdenum Oxychloride
Nickel Chloride

Phthalimide, Pyrocoll,
Quinone, Saccharin
Salicylic, Tartronic acid
Terephthalic acid (P)
Trioxymethylene (a)

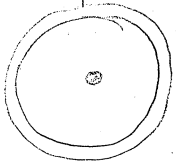
E P Kohler Amer University
Experiment Station Washington
Says they have tried Glenn
Ohell says we can test
them there.

Reason we hear only the
screw on boats thru water
is blades of propeller undergo
unequal stresses at each
revolution, + blades vibrate
like a bell 1000 sec 3 log. they
3000-etc, this is not heard
under water on account
of echoes — The general
vibrations of a ship which
felt by fingers etc would
slowly affect ear especially
as they are non periodic

Subs even at 4 knots must
have much higher pitch to waves
of blades vibrating as they are
only 2 ft whereas a Cargo
boat are 6 to 8 ft + also
because sub ~~goes~~ revolves
twice as fast at 4 knots as
a Cargo boat does at
10 knots

If the propeller blades give
the sound then each blade
must give periodic vibrations
if this is true an accurately
tuned resonator will
enormously magnify the
sound, as there are 6 blades
there will probably be 6
different periods with variable
volumes giving a noise characteristic
to Navy yard + test
the vibrating times of propellers
on land also at yards where
they store screw propellers
for Cargo boats —

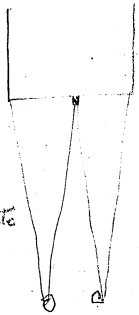
Water diaphm



Supported in Center
Then drawn 10/16 suspension

Make tube

+ see if just as good as seperate tubes

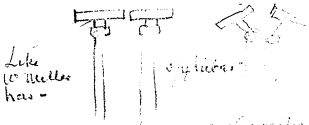


on seperate stethoscope tubes see of lagging to prevent loss of heat increases distance hear sub -

Its probable friction of sound waves in pipe per ft is independent of the surface, & directly as to the pressures on walls, the pressures in a 1/8 & 1" tube is same the surface of 1/2 is twice as great the loss of Vol in small tube over large one is less of heat the loss with strong sound is very much more in % than with weak ones - call Hickory

Make test blindfolded at Tannage to locate sub by biaural sense Jenny, Hayes, Simpson Pierce see how close

Make two like this



Want to see about direction -

According to squares old stethoscope ~~of~~ taper with old stetho, the taper makes it 40% more sensitive

Try drilling holes in a plate see what happens

use expanding Camera shutter

Try direction expts with single tube & find sub in fixed also 2 tubes & check by Ear -

Knowns, Making taper ~~to~~ more or less per ft is not correct should be same condensation per ft. for instance 1/8 larger dia per ft starting at 1/8.

1st ft		1 to 4
2nd ft - by itself -		1 to 2½
3	"	1 to 1.77
4	"	1 to 1.56
5	"	to to 1.44

in other words first ft has too high a condensation

It looks as if stetho having 36 to 1 condensation in 1 ft too severe that 3 or 4 ft fixed taper, 4:1 ft stetho nearer with 1 to 4 condensation would be better

the cohale having proper varible taper

[25]

Burns to make a Taper 3/4 to
1 5/16 but twice as long
Another 3 times.

Test the little adjustable
Resonators out in field direct
by the Ear + on tubes —
Sub + Music Box

A double Cup separate Stethoscope
for Doctors would be good —
Get Bostone or then make
a double and test
Biaurial Stethoscope

See how Deans progressing

Meadcroft to ask Newark Yard
if shaft is in boat before launching
+ where is Screw propeller put
in —

Ask Payne if Hydrogen Det
is still in Sub when he left,
+ if they received Chlorine masks

If Chalk Phone is twice as
loud as Bell phone then
if efficiency of Bell is
10% — the Receiver will be
1% If Chalk is 20%
then Receiver will be 4%
or 4 times better

good musical sound
from blades of
Newark Cargo boat
Gd Red 1 shaft —
Geared turbines
10 1/4 — 4 blades

Hexanitrodiphenylamine 51%
Diphenylchloroarsine 48.2

This Explosion gives a very irritating black smoke

New London, letter from Secy of Naval Experiment Station "J M Defrees"

In all cases Cargo boats make more noise than Submarines

Under ordinary conditions of Weather Mechanical listeners which detect a sub at 4 knots submerged at 2000 yards will detect a cargo boat at 12000 yards when running 10 knots

with the electric which will detect a sub at 4 knots at 10000 yards will detect a cargo boat 40000 yards - no other vessels in the vicinity to interfere Ranges will vary with different types of ships & observers

Above are averages of many observations

Cargo B 36 times greater Volume mechanical
" Electrical 16 times greater Vol
Cargo B -
Electric 25 times more sensitive than Mechanical -

In listening for noises
in tubes with phones use
a break which shorts the
listening phones say 10 times
sec —
With tubes have a
revolving shutter at intake and
3 per sec to make a
continuous noise audible.

Hayes try

open on end bored to 3/4

4 3/4 tubes —

88

[illegible] [illegible]

also - 3 6 12 24

other ear

1 ear

Note 1/2 the dia twice the number of
reflections per inch of length
at 45° deg. Jed says same ratio
for all angles

Hayes when listening on
Dachem - follow in wake
of boat & see how far can hear
think which will go 2 or
3 miles - also ahead & parallel -

If we hear a cargo boat
750 yards, and a Cargo boat
makes 36 times the noise, according
to N London We can only hear
a Sub 125 yards -
as Hanley heard a sub 5775
yards taking in squares their
device must be 214 times
more sensitive than ours

Hayes - Try Resonators on tube
Edham listen to Sub with Resonators

CB13

Edison out of doors at Garrage
test new single ear stethoscopes
Each connected to a 14 ft 3/4
Tube + Stetho alone for
duration.

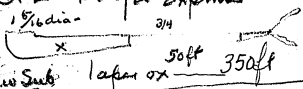
Make taper tubes 1/8 at small end
1" at large in, this makes reduction
1 of 1 ft " 1 to 64 pitch
1 of 2 1 in 32 "
1 " 3 1 in 21
1 " 4 1 in 16
1 of 5 1 in 12.8
1 " 6 1 in 10.64
test with Sub + Illinois 6 ox —
Listening hard rubber for ear
should be put directly on
the End of each tube

Make up the 1/4" Elmwood Twins
tubes bunched with 1" dia as
near as possible + make a
taper same as stetho.

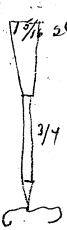
Wood End

⊗ Sub ⟨ with 7/16 hearts ⟨ 210 ft
50 ft

Oct. 2 Hayes Experiments



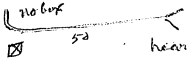
New Sub taper ox — 50 ft 350 ft



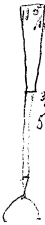
new sub.

Hearts to 370

210 ft
new sub



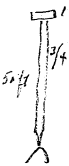
heard to 210 ft



Music box

heard music box
270 ft

Duplicated with Reg Cup
& 7/16 tubes
heard 100 ft.

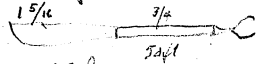


heard music box 260 ft

tubes with 1 9/16 box 245 ft

These 2 Experiments
bz tried again wind
came up

We now try old Rechmann

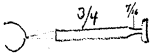
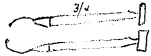
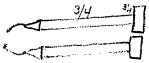


heard to 650 ft

heard to 650 ft.

Doubtless mean double tubes

It looks as if the sensitiveness depended on the pressure in the pipe at Constant Velocity of sound independent of the surface -
The 2 ears nearly double.
with 2 tubes both same size & at Constant pressure -

	Feet	Square
	330	109000
	470	221000
	375	140000
	500	250000
	515	265000
	600	360000
	630	397000
	650	425000

Hanley When you were listening to Qub at Nahant did you have to Constantly Keep turning the boat and did you spend a good deal on weakening Either ends + keeping to strongest place + could you Count Rest all the time or did you Count at 1st & then wait to strong place by turning boat what was avg of boat-weather 2 hauls or 2 things to Regulate.

Next heat boat to run ahead or drop behind till lost + stop everything see if pick it up again + how long a time.

Try angles -

Hurry up double listening tubes also double tubes on each side -

Hayes in 3/4 2 tubes 3/4 opening
in Sound Boxes, use 002 mica
with 3 hole plate, then 3 hole plate
and 002 mica, also

sep 001 dia,

I guess 3 better than 4 -

4 or 5 separate
002 diaphr
in Sound Box

to go on end of 3/4 tube

Fred Att - Make double length
stetho. with 1/4 opening + to fit
Ear if possible -

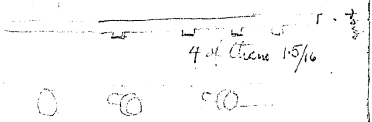
Hayes try with Resonator

I may want Resonators up
to 20" 12 to 20 - 8 to 12 - 5 to 8

find out from Capt Harris
if Can anchors or tie boat
to dock + stout screw 18 Knots

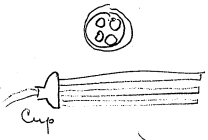
Hayes. ~~to have Experimenter~~
~~Listen direct then turn~~
~~with 1 ear then both~~
~~to check Exp's~~

Arrays make



On Audion, try 2 Receivers in Multiple & also series with seperate Listening Tubes to take advantage of both Ears Seperate them as far as possible & try get them same sensitiveness

Arrays



Arranged as 1 or 4 3/4 Tubes be used - seperate plate -

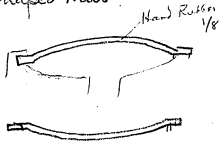
Returns make the 3/4 x 1 5/16 aft as long keeping same dimensions, at Ends —

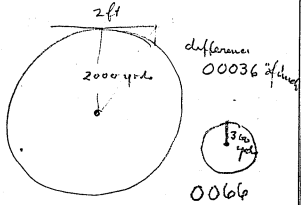
for Enlarged funnel like end to 3/4 inches thick starting at 3/4 – Each foot should be 1/16 more in dia + to double pressure should be 4 ft long 1 1/16 at mouth to double distance

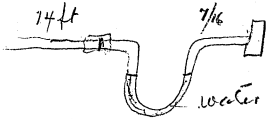
9 ft long mouth 1 9/16

Same relation at widening End. might not do as it would be 10 ft – Try 2 ft + 4 ft 1st – 3/4 to 3/16

Hayes in bbl of water try thicker diaphrms clamped tight no plate try hard rubber 1/8 / 1/4 thick also shaped thus



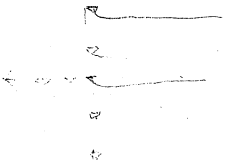


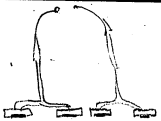


See what it does

*sub

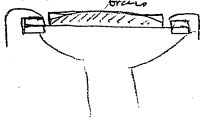
Try different





weight to back
pressure cannot
work him as well

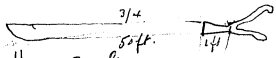
Cant move more but Water
Can — Thus Experiment to be
tried in Water



Try tips on 1"

Oct 4 some wind

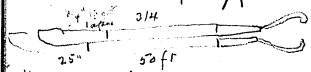
NEW Submarine



Hear 270 ft.
ear direct 345 ft

Oct 2
hear to 350 ft

A

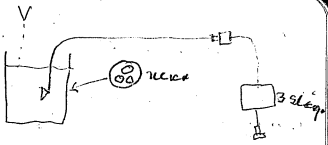


Hear 400 ft. - E new listening Tubes 400 ft
Ear direct 345 ft.

hear 350 ft
Ear direct 345 ft

Using old Sub and A Expt
hear 525 ft
direct by Ear 425 ft

Worse yet



Single phone listening. hear to 40
2 bells in series single tubes to
Each ear heard to 54
then put 2 bell phones in
Multiple listening with tubes
to each ear heard to 60
Listening then to two regular
head phones got 148

Smoke full 8" stack.
200 cc Aniline oil. 54 Enclosed
10 lbs salt, lasted 80 minutes
full — for 10 ft stack
Requires 75 lbs Aniline for
hour, Costing $252 for 12 hours
this Covers say 225 miles
in the 24 hours — This is
much more smoke than EVER got from
Lunenberg!

should say 2 sticks
beside the 10 ft stick of
3 ft in dia wood
Commencing the smoke
or 5 times less (10)
$5 daily

Rubbers like hard Rubber
worked by
Celluloid, Compressed Camphor
White discord way
Paraffine -
~~Stones~~ Japan way
Ivory
Zinc - Glue with formation
Limestone burned -
Cork, glass, Steel
Rosin Sealing wax
Sulphur.
Gypsum - ~~Stone~~ Fluorspar
Iceland Spar!
Hard Rubber or Dense Shape

Condensers

In chalk phone put in 5 micro
farad to keep the Chalk from
giving a Current or diminishing
Resistance - also when
using Microfone -

Try with 5 mf Condenser
& Micro of adding
many more cells
microfone resistance
try 26 small carbon
Cells -

Magnesium Para Rubber ½ inch
Cell Mica 202 series filled with
liquid very light & also heavy
Try 2 1/2 Cup & 1/4" disc
also 1/8 supported in
Center so no flexing on a
3/4" tube & pencing
High Carbon Steel glass hard. longer
not drawn - ground
See further on
Tin - flexible
Metal

22.5°
5 Reflections per foot of tube

45° 12 Reflections

1"

1/2" pipe twice the number of reflection

Leg at 45° is 1 ft in 2 1/2 of pipe

Side reflection

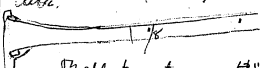
Hayes, Make full size 1 5/16 Cups, with Hard Rubber 1/8 thick 4 of them,

pressure will not except with Lucas & there will be concentration

Bottom Dia Condensers →
Gilsonite, Cannerone,
Candelerna wax / Lead
~~Zeo~~ Bone Horn
Phenol Resin - Pitch
Asphalt. Compressed Naphthalene

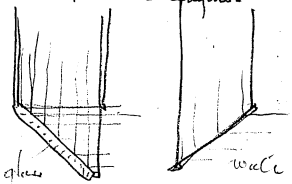
Phosgene Gas Condensers
with Anilene becomes
acid, forming Carbonanilide
& Anilen & Hydrochloride

After trial of the 1/16 capes 20 ft tubes.



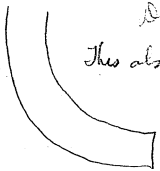
Bell it out over 4" length as wide as possible so it just fits 2 ds =

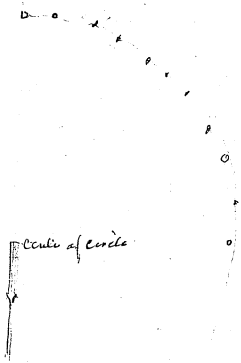
~~probably tube should end at 1/4"~~
~~This removes 2 lengths.~~



Dia -

This also





With the multiple 1/4" tubes + also Reg single tubes 3/4" test relative direction,

If it shows up good under a lot of 1/8" + 1/16 tubes

1/16 taper

ft	square 1/16th	Pressure
1	441	
2	400	
3	361	
4	321	
5	289	
6	256	
7	225	2.0
8	196	2.2
9	169	2.6
10	144	3.0
11	121	3.6
12	100	4.4
13	81	5.8
14	64	7.0
15	49	9.0
16	36	12.2
17	25	17.7
18	16	27.5
19	9	49.0
20	4	110.0

1 5/16 big end

Later at small end 1/8 big end 1/32 small end
Later at big end 1/8 - 3/32 then 1/16 at first.
Later at small end 6 oz
Perhaps
1/8

Think last 2 ft showed 6 oz of glass as friction is so great

If 21/16 dia big end, 2/16 small
110 times pressure 20 ft long
then double length gives
42/16 big End — 4/16 at small
+ 100 times pressure,

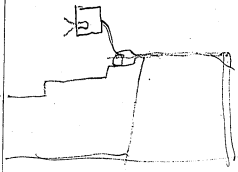
It may be Bullow that one wet with the water will be more sensitive than those like Hard rubber that are not wettable Try this out Those not wettable will have air cushion which is bad Must look out no grease from fingers -

8" Chimney 1/4 full
got 1 hour 4 min
1660 gms Nap burning
+ air passed thru
at 100 cent heat,
This smoke volatile
+ probably permanent
in air —

Make some resonators
Large in diam say 6"
to get the sounds from
propellor or any sharp
noise to echo say 12
times to give a musical
note —

also set of resonators for
Cargo boat propeller

Collect all my Helmolz
Resonators



It may be the sound
should be fed into
a Barrel + then with
Resonator pick out the
sound. The echoes
prolong + absorb all
the Energy

Possible means of detecting German 2 Knot noiseless Subs -

1 = Sound direct from knocking of shaft & propellers in boxes -

2 = Resonators to amplify the musical notes given by the propeller blades

3 - Bow waves (ie) displacement spreading out

4 Detecting eddies due to propellers -

5 = Detecting waves thrown out air by pressing of keels -

6 Echoes from very powerful Transmitter & tuned sharply Resonators for the note sent

7 = Echoes by the Pipe's Com

8 There are probably strong low rate waves & also Continuous waves not note heard because continuous Combs made audible by -

see next page

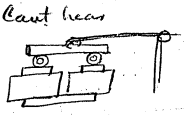
The music box glass cover gives waves of very large amplitude. Use Microfoons on tube & rotating plant ceement when on listening phone a see of Compact Heap waves

Tell Papa put gyro in Vacuo — ~~stop~~ drift —

Make a hard Carbon Microfon for jaws — use scutling dia & Moores 1st phone with hard Carbon & delicately balanced to be used with Resonators

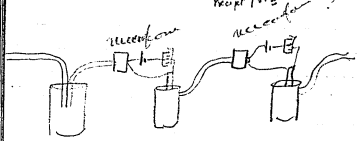
Get a Bell put in under water & listen to it, see if it is sensitive to extremely weak knocks just get slightly knock that can hear in air & then with same blow under water see if just as sensitive

Make a vibrating squeezer for squeezing 2 tubes (10) listening tubes together, using softest rubber, + ~~smoothing~~ magnet for pinching — + break wheel way off so Cant hear



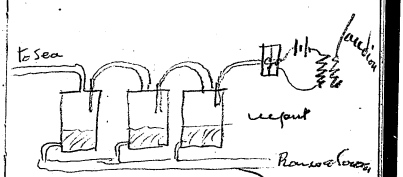
~~If Resonator output between each stage of an amplifier, then of strength of sub to 1st would give 2nd stage — 3rd " 4 " — noise only twice that of sub sub two + half times louder than sub 12 " " " 62 " " "~~

Either Mercury or Bell along
Recept 1000



so on then amply by
Audion —
The number of stages are
such that the noise is wiped
out by losses in transforming
while Resonators compensate as
far as possible for loss of
transfusion =

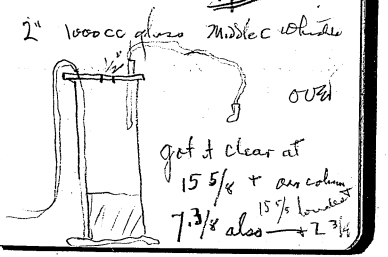
Experiments show that Open
tube resonator must be 1/2
length of Closed tube resonator
Middle C 5 7/8 open 11 3/8
Closed tube is 1/4 of wave length + [illegible]
Closed seems much weaker
but it had poor opening —
Listening tube 1/2 wave of Column of air 6 ft.



also at Receiver end
loss of resonance 25% Each
resonator, loss music 5 @ 10%
Using magnet punch Tube
Vibrator —

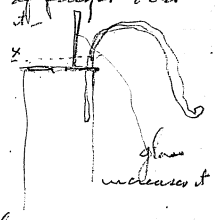
Expt

2" 1000 cc glass Middle C whistle



got it clear at
15 5/8 + air column
15% louder
7 3/8 also → 2 3/4

If I put a hole over hole kills at 1/2 of finger over hole kills at

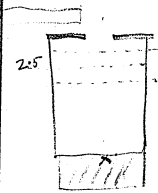


X holding glass at X don't diminish it much when 1/4 away

Air weighs about 20 milligrams per inch 50 inches to 1 gram

Have Hanford, Meadcroft put paper in every reference to Sound in Silliman & Phil Mag

with 2" pipe 5/8 hole in center get it around 15 5/8 – 7 3/8 2 3/4 – also by closing the hole more or less – hole full open in open air & whistle 256. blown more gently by gasometer get it 2 1/4 then at various points up to 1/4 inch & fairly loud. Think the Echo ~~the~~ that surfaces – strange



Node of fundamental is at x water.

Ratios are 1 fund then 3rd 5 7th 9th & so on

Antinodes are between these nodes.

Wave length of the successive tones are $1 - \frac{1}{3}\ \frac{1}{5}\ \frac{1}{7}$ etc

& vib frequency are 1 3 5 7 etc

No change takes place or little if a solid partition at an node is inserted — or by putting an antinode in free communication with the air —

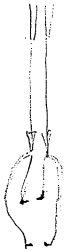
The greatest pressure is at the nodes — greatest amplitude at antinodes

The nodes — diaphragm have for manometric flames

fund	2nd	longer 3rd	bout	4th	7th	fund Wh	vib sec
16	5.33	3.20		2.285		64	203
15	5.00	3.00		2.142		60	216
14	4.66	2.80		2.000		56	232
13	4.33	2.60		1.852		52	250
12	4.00	2.40		1.712		48	271
11	3.66	2.20		1.571		44	295
10	3.33	2.00		1.428		40	325
9	3.00	1.80		1.285		36	361
8	2.66	1.60		1.142		32	406
7	2.33	1.40		1.000		28	464
6	2.00	1.20		0.857		24	542
5	1.66	1.00		0.714		20	650
4	1.33	0.80		0.571		16	812
3	1.00	0.60		0.428		12	1083
2	0.66	0.40		0.285		8	1650

Better get a bellows, from a forge or a hand pump & reservoir —

Have Hayes test this



leave one set open while listening to the other, then punch one pair out,

Open pipes have 1st overtone 2 next 3 4 + 5 which is different from Closed pipe which is 1 - 3 5 7 Etc.

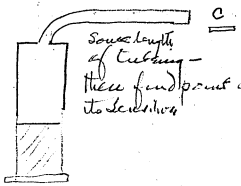
Stopped pipe is active lower than Open pipe.

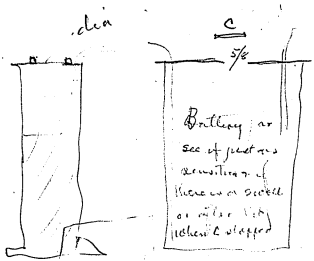
A condensation is reflected as a rarefaction and rarefaction is reflected as a condensation

34" pipe mid C

length 14 ft

With 64 Vibs sec the harmonics are
64 128 192 256 320 384 448
512 576 640 704 768 832
896 960 Etc
lower of scale C





also

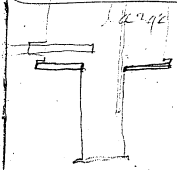
Tetrachloride Carbon warmed for air in tube, SO_2 64, NH_4 18, HCl 36

CO_2 44

Ticking of a watch of heard
300 centimeters in air centimeters
400 " in alcohol
500 " in oil
or 700 " " water

according to this water is 2.33 times greater medium

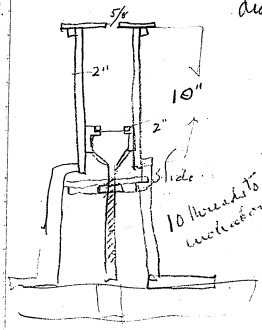
Centimeter .393 of an inch
2.54 Centimeters 1 inch



Try this

C1215

[illegible] tubes – to adjust:

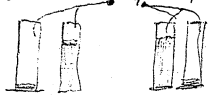


dia .002 Mica
1 5/16 Reg

Adjust for 1st overtone of C
& then run a curve with glass to
see how it varies changing glass &
then trimming. also keep 1st &
overtone sounding 1" below sounding 4 [illegible] glass
very slightly + see if this tuck
can be made up + the tone brought
back

Possibly might have to move
listening tube. If this scheme
works it will be a fine way to
adjust.

29th Experiment today 2 Resonators
were cc jars to each each 1 jar
$15\frac{1}{2}$" the other $2\frac{1}{4}$ @ 2 7/8 –



All listening tubes same length.
hear down at C note 550 ~ 5
+ with the 775 + still well
audible –

Cuts iron noise enormously —
a Ford on road clapped underneath
25 ft of listener but Engine going
at high speed did not prevent
hearing C at 775 ft.
then poffy came from head

My old navy book says high
sung of Submarine (commutator)
Can be heard for 15 miles in
Extreme Cases & another man
says 4 miles.

US Submarines

Boats G4 125 to 560 Rev
K boats 146 To 374 - G boats
1-2-3- 152@400 Rev min -
E1 150@340 min

Have 2 shafts Motor on each
shaft direct - impractice
that vary 3% on number
of Rev -
Loudest sound heard
needed is propeller &
gyroscopic Compass

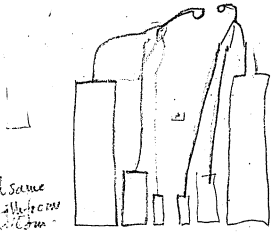
Commutator Segments or bars
G4 = 124 - 2 Commutator bars on
motor, Dia 17½"

G 1-2-3 288 bars Dia
27½" K 1-2-3-4-5-6 252 - 262 Vbs
bars Dia 24" see at 2 Kw
Number of poles G4 - 6
G 1-2-3 - 8 (poles) main
K 1 2 5 6 - 6 main poles

there is a perceptible humming noise when running submarine from gyroscope Compass

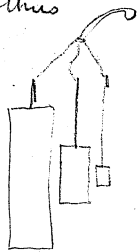
Table		Limit		Extreme Limit	
24"	8"	4.8	3.43	2.66	2.18
12	4	2.4	1.72	1.33	1.09
6	2	1.2	.86	.66	.54
3.	1	.6	.43	.33	.27
3"	1"	.6	.43	.33	Decimal

Magnetic this or magnet.



All same length from decom

on this



Oct 30 – 2 $2\frac{1}{4}$ 7th m
Multiple Loudes Chan one
4 m Multiple a little
Louder get it
Nnmolchiffle 31
inches from C
Long 1 hundredth 41 7th to 5 inch Bar
Today we get it 1090 ft
about limit Day quiet sono

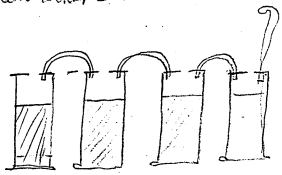
wind — found on reaction that these 4 are not nearly as reactive as 4 my multiple all turned $2\frac{1}{4}$ $2\frac{1}{8}$ — get it 31" from C =

It is very important that the resonators build up slowly for then the high notes of white caps & splash of water on boat & ripples will be so slight as compared to continuous high notes of blades of the submarine propeller —

Try also Open top Resonator also try a rim around it

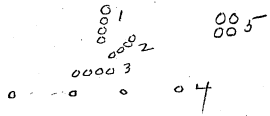
also a board as open separate jars more than $13\frac{1}{2}$ say 16 inches

to see if they interfere with each other —



See if this works in series to build up

See if it makes difference as jars are in these positions

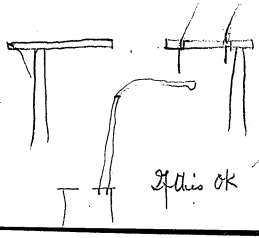


Also raise 2 18" high
+ leave others at present level

Get a good table to operate
on + level it —

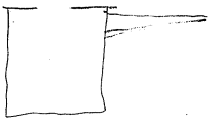
Put tent up 1600 ft.
+ then when get past 30".
go + test it — if OK move tent till
it reaches a limit

Test a single tube with a
funnel shape tube

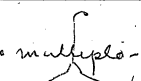


If this OK

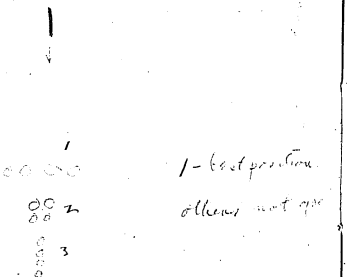
We can make it on small
jars



4 Res multiple -



got to 35" with Brass
Y/s - 31st Oct -
When Tank is full up
4 for 5 or 6 inches going
down heard to 44 inches



With glass tube up 14"
heard with single tube 34
This is disappointing
Apparently no gain by
putting up the Multiple
as far as Volume is concerned

With big $5\frac{1}{4}$ dia Res. $13\frac{1}{4}$"
in Tone with C 256 fundamental
$21\frac{1}{4}$ inches away -
looked on table Max distance
heard 28 inches -
with 2" glass tube turned
to $15\frac{1}{2}$ got it $32\frac{1}{2}$ inches.

The $5\frac{1}{4}$ tube Res has a 5/8
hole, I am now making it
2 inches & will adjust by
a glass plate over hole

2" glass tube Open on top
air Column 5 3/4
Can hear to 33 3/4 inches

Open 2" glass holding a 7th
tube) Rec near d end change
Volumin, holding glass
plate 3 or more inches above
hole no change only noise
when 2" holding underneath
of plate no change
Best place for end of brass
pipe (open end) listening tube
is 1/2 way down, which
is not the same for 5/8
hole closed tube 2" which
is just at top 1/8 below top
brass plate

Note Noticed enormous
loss of Volume of rubber

End of listening tube
dont fit Ears tight
Volume Change 2 to 3 times
less if there is an opening
must incorporate this.

The all brass 2" with
long screw & index.
with Diaphm & Chamber for a
bottom 002 mica to use a
plain resonator closed open
top — 5 3/4" air column
nearly on
resulting in the 5th plane
water column — Neither hearing
it has a diaphm of only
002 mica for a bottom
I listened by placing
brass tube listener into
top of tube — when I
listened to diaphragm
heard to 41 1/2

5 3/4 is best place hear by
Diaphgm — 40 1/2
Hear by using listening tube
at top — 37 3/4 —
so there is very little
difference, + if any in
favor of the diaphgm
Can't find the 4th —

As I cant find the 4th on
dead open tube I guess I
will be necessary to use
the 5/8 closed top —
will have to make a
2" 18" tube with
close thin bottom
and — with the 8"
2" brass tube I have
can get a 4th —

after cutting 2" hole instead of present 5/8 in
top of 5 1/4 dia big brass
tube we found proper column
of C fundamental is 14 1/2"
listening from top —
Greatest distance C can
hear is 52 1/4 mch

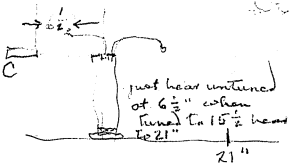
High water mark,

Tuesday when he slips +
stands over to C which the
sound not heard naturally
but takes time to build
up + after shutting off it
fails off + This is not
absolutely certain but
appears so

Have Hayes confirm
this —

256 C' 2". 1000 cc jars
5/8 hole

~~20~~ Zero. Don't hear.
turned to 2 3/8 hear to 20"



at 15 1/2 sharp get fundamental
9 quiz. hear to 20"
There is no 5 1/2 overtone in rod,

2nd Resonator in, 15 9/16 the 1st
[illegible]

Boys always listening to 2
Rod much louder
Ott says when not listening with
tube outside never strong
but sometimes hears any noise
from tube with free piece

Boys outside hears no auto
with tube. Can't hear auto

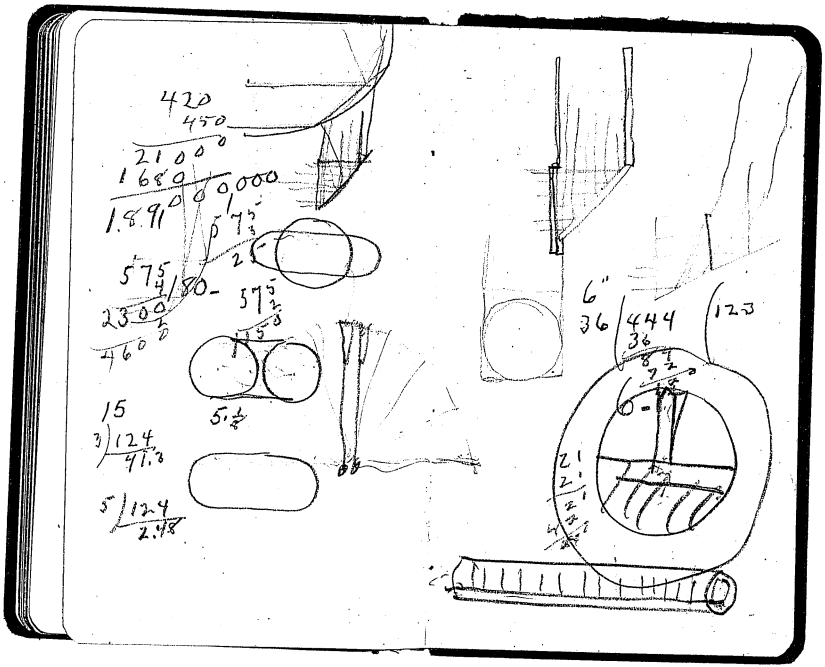
Continued in
#3 Lab Note book

$2\frac{1}{4}$ 1st

~~[illegible]~~ 15" 5/4
Then is should be (doubtful
louder than $2\frac{1}{4}$
& is exact tone of
256 mid C –

Exact is 2 7/32 & $2\frac{1}{4}$

18 | 125 – 8
| 16


420
450
21000
1680
1.891
575
2300
460
15
124
41.3
5
124
2.48
6"
36
444
36
123

Notebook Series -- Pocket Notebooks
Notebook, PN-18-10-31

This pocket notebook is a continuation of PN-18-09-10.2. The one dated entry is from October 1918. The book was used by Edison for experiments on sound detection devices to locate enemy submarines. The experiments were discontinued after the signing of the Armistice on November 11, 1918. Among the employees mentioned in the book are experimenters Isidor (Jerry) Chesler, Newman H. Holland, and Frederick P. Ott. The front and back covers are both marked "War 2." The pages are unnumbered. Approximately 30 pages have been used.

Oct 31 1918

Resonator $5\frac{1}{4}$ inch Resonator of Brass closed at top & cut with 2 inch hole & opening for insertion of brass listening tube with soft rubber tube & pinion with ear piece. Tuned to fundamental of C 256. I heard it unmistakably at a distance of $52\frac{1}{4}$ inches measured from center of Resr to End of Whistle, = Length Column of air $14\frac{1}{2}$ inches —

I noticed that on pinching the Gasholder tube that the sound didnt appear to die quickly & it didnt start at once,

Couldnt find any other tone the jar is too loud for the 7th.

This is High water mark

The $5\frac{1}{4}$ Rsr with 5/8 hole is very much weaker only hear to 28 inches.

When the 2" glass tubes were all tuned to a 4th & arranged for proper phase balance.
Limit of hearing 35 inches when Tank float of gasometer is way up near to 44 inches

When tried a single tube heard it to 34 inches. Tank way up, only gain by this expmt may be that can hear several overtones But volume is not apparantly gained by multiple acting —

Try all 4 in multiple. & get limit, now untune 3 & see if limit is the same,

Then tune on to the fundamental of tune & get limit.
2 ones the 4th the other 2 out

3 See if glass tubes are exactly 2" inside dia

4 = Tune the 4 tubes (2") sharply to determine the unmistakable limit each separately. Then multiple are all & listen for limit. to see surely if there is no gain

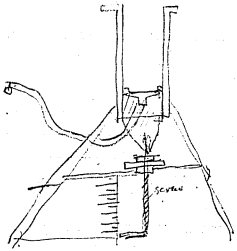
5 = Multiple are the 5¼ with a 2" tuned for a 4th & see after determining the limit of the Big Res if the limit is increased or diminished by now Connecting the 2" Res, both mouths on a level.

6 Tried 8-4 use all brass listening tubes using Rubber joints see if limits improved

C5

Notice with all top open that end of listening tube is maximum 1/2 way up whereas with 5/8 hole it can be placed anywhere even within 1/8 inch of bottom or just under brass plate at the top

The 2" brass Rec 8 inch range



that it is just as good apparently as the glass ones with 5/8 hole, when tested with 2" top entirely open. It gave the fundamental a 5 3/4 on index. ~~Brought it back to 3 3/4 back it up. Index not in right position~~ OK —

By using listening tube passed into tube at top had to 37 3/4 and by listening to Diaphragm got it to 40 ± so there is very little difference.

1 Lay a plate over diaphm close fit + see limit for top.

2 put top plate on top with 5/8 hole get limits with plate over diaphm + without by listening at top. Then remove plate + get limit listening to Diaphm with top on

With brass 2" + dead open top Cannot find only lone from C except 5 3/4 mah (uncorrected?)

Note very important end of listening tube fit ear suction tight, slightest leak makes enormous changes in Volume

Improve it by a soft yielding material on tit so not go into ear, so far + will be tight with slightest pressure.

Think taper tube preferable - prevent hole just near ear + tapered up to Rec opening to cur in Column to 3/8 — possibly 1/2 + of 1/32 brass

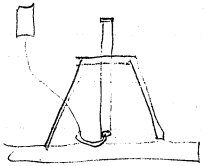
Make 16" long 1 1/2 dia glass tube ring on top to place a top plate on + have 1/2 hole in center + hole for listening tube also another plate with 3/8 hole another with 1/4 hole

Can lay plate on this

Put a cork in bottom with the water filling tube + index,

Use thickest glass can get.

Set the pipe in a wooden plant + see index can be seen



If Hayes in Music room as other Mohitlers get them of different notes find out if Mfrs make for different notes —

Bring C right over a Res & find out nodes by moving in around top —

Try 1 7th in tube 1 ear & 1 fundamentals 15½ in ~~multiple~~ to tube for other Ear & see if as loud as 2 fundamentals or 2 7ths —

Bring the 4" tube down Jerry used may be wrong are not getting fundamental & it needs 28½ inches —

If a diaphm in top of Bug 5½ tube .002 mica 1 5/16 & see if Can find fundamental dia to used in top,
or get a piece 2½ mica .002 & lay over top & wax it around Edges — & get Limit after best Turning

Bring the big 10" down & Tune to C & see Limit

I found my finger closing end of C volutte Chu Cut of Drum very sharply, tried big 5 1/7 with this —

Ept shows 1 fundamental & 1 7th — Concluded

I cannot. nearly as qualition as 2 of 7th to one Ear — Evidently the long Column detracts from the short. — This probably get worse when 5 1/7 Res is put on multiple with the 2" lined to 7th — Try it

Use 2" glass Open wide on top side of fundamental C isn't at 12 1/2 inches or around there it should be for 256 or if books means only the Condensations Count then around 6 inches which it doesn't.

I guess in fact sure they mean Condensation Complete waves length is about 48 @ 50 inches & this dont check up but if 24 @ 25" be length of Condensation then everything checks up fairly well —

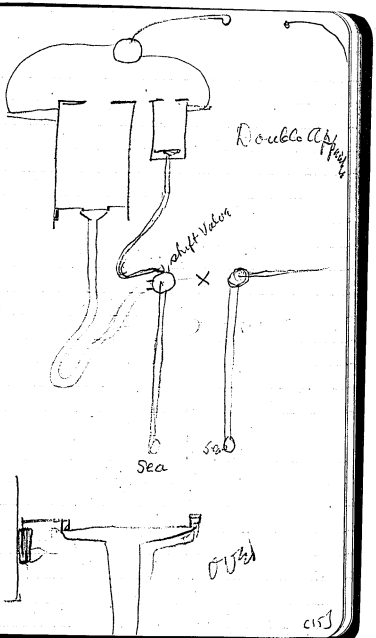
Put a long pipe 3/4 in front C tube & Connect the Diaphm with End of Diaphm tube see if Tube responds OK when adjusted to 5 3/4 — get Limit —

Get a big prong 12 to 18" long weighing many lbs & a felt hammer & Keep it vibrating & see if Can adjust for the fundamental & overtones —

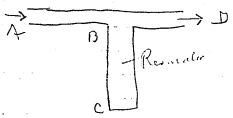
Burns make a Conical Res

2" at top 5" at bottom
18 inches long - closed at
bottom with gauge glass
Use closed top with 1/2 rings
one 3/4 dia 1 1" dia -

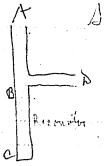
Send Note of C Ilvin diaphram
Close the hole on top &
insert lilening tube, see if
Can find the 1 yr & on
Brass 2" Res, of Cant,
get rings old 4" pattern Dia
Hadfield to get fundamental
see 10 bars dia -

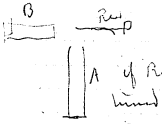


possibly 2 listening tubes in ~~each~~ one Resonator will double the loudness using both ears of 20 it will render it unnecessary to have stereophonic Resonators for the 2 ears. Try it.



Sound entering A Resonator BC absorbs the all, a noise is heard at D



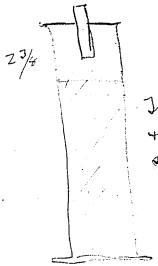


If Reed is going + A is tuned to it the bringing of B also tuned will while A merely muffled

Rayleigh says to get the greatest intensive effect the Neck of a bottle Resonator should be elongated to get the pitch + not change the mass body

Say body should be so small or possible but this I feel intuitively

Try this.



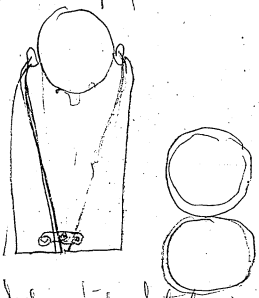
Turn for
2 3/8 7/16

Then put on tube
& tune for with
use of dropper

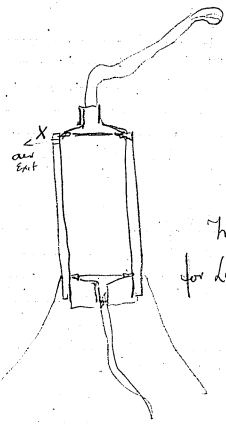
If glass 2" jars are really
2 1/4" inside dia hole
should be 13/16 to give
same echo area as the
Big 5 1/4 Resonator
which is so sensitive – try
87 1/10 Echo surface.

If is the Echo surface that
does the big then a tube
closed with 2 dropper
should be good.
Can prove this by the 2"
oz/mca + the hollow
phone Dropper to listen to

Stethoscope for Diaphragm



Inverted listening tubes, hotel ear fitting accurately ear piece and 3/4 or 1" separate diaphragm to get full amplitude in each ear + not exhaust it.



Try this for limit

Possibly whole range from 200 to 2000 v.s sec
Can be got in short tube - if friction is small & X leak plugged when put sub

Tuning forks. Number of vibs independent of width of prong —
Rate varies inversely as sqrt to square of the length

I should say that to clear & build up volume by means of a porker a Resonator, that it should be very wide in relation to its length
This would absorb all the energy collected over several seconds
Correspondingly record higher accelerations

Prof. Kah
1500 for
1900 second

When testing big Res
5/4 test all the different listening tubes to determine which is best listener,
go by distance,

Also ascertain by distance how important a close fit of a piston must be

Cut the reads apart or if Fred can arrange it slide them so can see how many is ok on big resonator

Have Werner record these equivalents & knowing seconds
Seccots — shell — dips such
Thickth very — Tough
fear signals flock
of F G H, get rate per second

Find a tuning fork, rather
~~[illegible]~~ should have
a Magnet & vibrator & battery
[illegible] as resonator
& use in place of
Red pipe & galvanometer

The Cubran used Manganous
Sulphate & not
Manganic sulphate as
I told him to

Manganic Sulfate is
Red, Red grass
~~[illegible]~~ green
Make

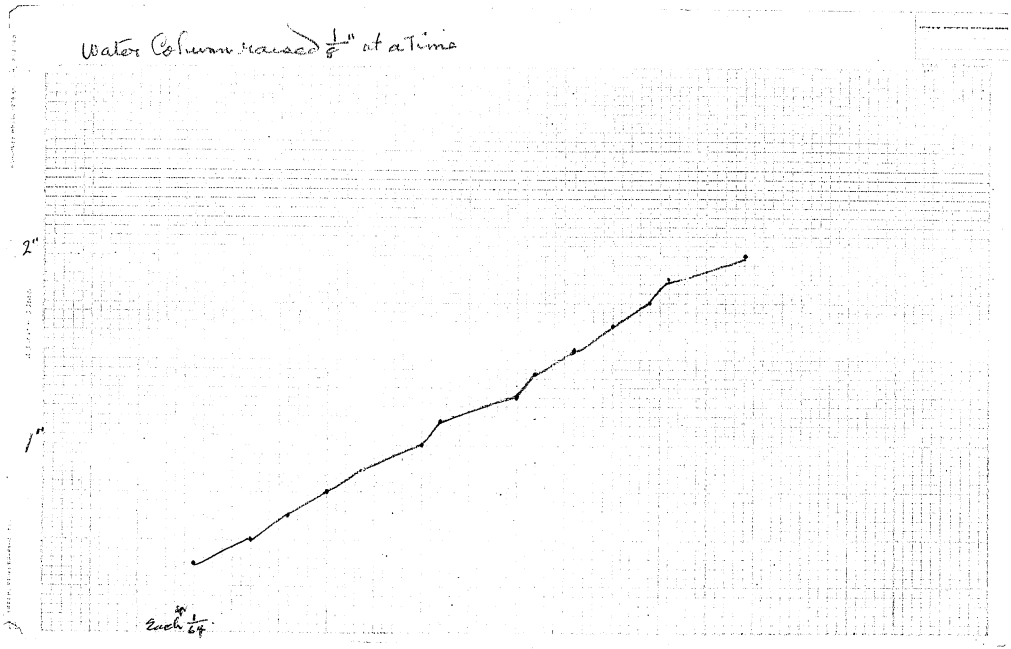
Only 3 Manganates known
Calcium, Ba, K & Ca -
insoluble in solution but
K dissolves them somewhat
decomp to permanganate &
Manganic oxide -

~~Manganate K~~

Make in various ways
Ferric hydroxide -
ditto with 20% other
oxides to act Catalysis

Try tuning for a his.
Exciting air from pipe -
a continuous & intermittent
scratch on a wheel -
hitting dull things with
a soft hammer

[ITEM(S) FOUND IN BOOK]



Holland's fork probably has no overtones

Adjust a Resonator to its fundamental & then to its 7th or so we get an overtone – if we get a 7th then is the Resonator not the fork

The $3\frac{3}{8}$ jar – Just thus the 6'

Holland's fork as source sound

Opening	Length Column cm
$1\frac{1}{4}$	$2\frac{1}{4}$
1	1 3/4
3/4	1 1/4
5/8	1
1/2	3/4
3/8	1/2

weak after that

It weakens after 1"

$2\frac{1}{4}$ 1000 cc Column 2" to 7th

2" Pyrex plume bottom both 5/8 hole 2 7/8

Evidently small the dia of tube the longer the column with same opening

Brass tube Column 1 1/4 hole
7th is 4 3/4 — Hold 2"
full size Column 5 7/8 -

Volume apparently no
greater after 5 7/8 but may
be a little, [illegible] 5/8
gets weaker & weaker

With a 4" Mechanical Resonator
following O.K.

128 Vib/sec	7th is	3.680"
256 "	"	1.880
512 "	"	.980
1024	Prime	3.150
2048	"	1.575

Varying 1/16 @ 1/32.

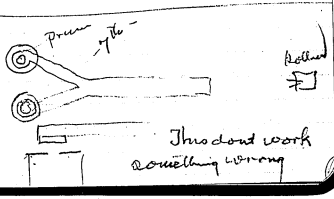
decreasing opening shortens
Column | this probably directly
in proportion.

With 6" Res

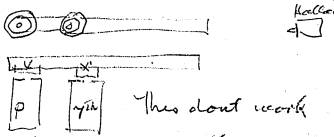
Opening	Column	Difference
1.25"	2.25	.50
1.00"	1 75	25 mistake, 3 given 25
0.75 -	1 25	50
0.50	75	

Run this over on 2" 2 5/16 - 3 5/8 - 6"
Resonators.

Also try holes out center



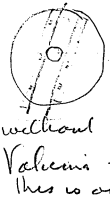
This does work
something wrong



This dont work

Either prime + 7th

Dont work simply when either X or X' closed but when jar is taken away the lead —



Can shave hole over nearly to Edge without demonstrating

Valueis —

This is an 2 5/16 1000 cc jar well try it on 6" Battery jar —

Brass tube Diaphr — placing sheet paper over 2" open top to act as diaphr dont find any place 1/8" Column to 8" Eveddulley - dia at each end of a Column of air dont work

With a 002 ~~Mica dia~~ I get it ~~at~~ 1 3/8 — ~~but~~ Everything is very much weaker than when open

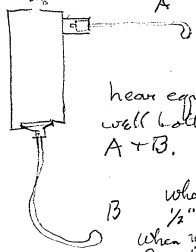
With 002 Mica dia Becomes on Cant find any place on Brass tube

Brass tube

3/4 inch hole

5/8

A



heat equally
well both Ends -
A + B.

B

When 5/8 is made
1/2" it is stronger
When made 1 1/2
B is stronger A very
much weaker

Hollow fork 2 7/8 for 7/16

With the 3 3/8 jar - Hollow fork
Camera shutter & index
Height with Water on Cohesion -

2"	1 5/32
1 7/8	1 1/32
1 3/4 -	1 "
1 5/8	15/16
1 1/2	7/8
1 3/8	13/16
1 1/4	25/32
1 1/8	21/32
1 "	5/8
7/8	17/32
3/4	15/32
5/8	13/32
1/2	11/32
3/8	1/4

poor

127 Kuch in pack
124
889 H
254
127
15129 Scraped

35
35
175
105
1225

1225) 15129 (12.3
12250
2879
2450
429

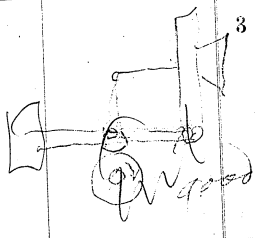
Notebook Series -- Pocket Notebooks
Notebook, PN-13-00-00

This undated non-standard-size pocket notebook was used by Edison during 1918 or 1919 to record ideas about business matters, experiments to be tried, and other tasks to be performed. Some of the items have been crossed out and marked "ent." Included are notes relating to various electrical phenomena such as x-rays and "xyz rays." Also included are entries pertaining to the electromotograph and chalk telephone, battery cells, acoustic experiments on shipboard, audions, disc records, radium, and a chemical paper sensitive enough to print wireless signals like a printing telegraph. The business-related entries include minor items on salaries and labor. The front cover is stamped "Ledger." The book contains 144 numbered pages, some of which are blank.

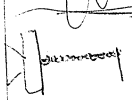
Hunt in Orr Mill [illegible]
tract [illegible] & [illegible] cyl
the Sodium Ele-
+ make good [illegible] one
also buy a Headley's
Mill tract up a load

[illegible] from the [illegible]
Co near Orange or a
[illegible] load the [illegible]
Rubber Lenses [illegible]

Maxwell-Chandler-Gilling
[illegible]
[illegible]
[illegible]
We can discuss [illegible]
[illegible]
[illegible] the [illegible]
[illegible] of our own
[illegible] of [illegible]
Before starting we
could test the [illegible]
Machine we make &
see they work OK



see if Cupric Ammonium
would dissolve Ammonite
on a piece of
Carbonate



For Checks

By double Dilump with

Silicate Costs —

Also Lungstates

Collect all the XYZ

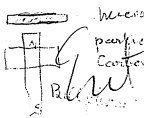
all made by Solum

Also my Personal

books of XYZ Separate

Whereas a Certain

Sulphate of Magnesia



Tray Selatoy — Poulicals

See drump with Flavin

for those

Divists Election

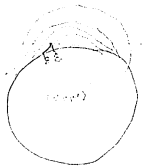
test all my Thermo couples
for Magnesium & alloys
Thermo effect
they are in Sub
solution at [illegible]

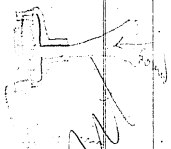
Should make fusions
of salt & in this
Crucible all sorts
of Bombus pure &
with impurities

Trompe with tube
like Mercurie leading to
another trompe pump

medium – to detect 7
displacements of the order
of 1000 meters

Put a Wheatstone Bridge
Condenser in shunt
Space of the order of
glass-connect wires
Invite Graphium
Chromium & see if any
more when cleaning
Repeatly

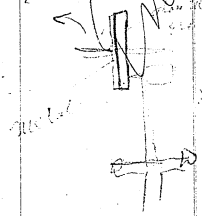




See what happens

Put all the Electric Gadgets together in Library

For filling Air Receiver
Medical Galvanism apparatus
use Iron 180 to 200
Mesh MgO.
Carb Ca W Vanadium —
see what happens



Use Absorption in
Step Experiments — improves
& also give hopes
on signs of Continuity
when [illegible]

Seen of Glass [illegible]
[illegible] Vacuum tube
is sensitive to influences

Experiment — 3 ft [illegible]
heated to melting point
Barium & Lithium
[illegible]
[illegible]

Try Hypothesis the Land
[illegible] action on [illegible]
of Barium & Lithium

makes sparks from
[illegible] side of
deflected [illegible]

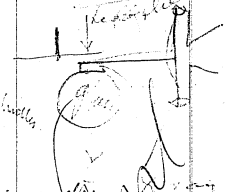
X ray [illegible] long
from wire [illegible]
[illegible] Lithium,
Barium —

Look up Electric [illegible]
[illegible] Chemistry
got his information
Look up Science [illegible]
[illegible] got [illegible]

Condense pure
Condensed varnish
at lowest pressure
heat 110 perhaps
with [illegible] pressure
[illegible]
[illegible] hydrolyzed
[illegible] hydrolyzed
[illegible] hydrolyzed
[illegible] Varnish

Take old bad cell
[illegible] 80 feet
[illegible]
Cement [illegible]
Platinum [illegible]
[illegible]
[illegible] hydrolyzed

[illegible]
Take [illegible]
[illegible]

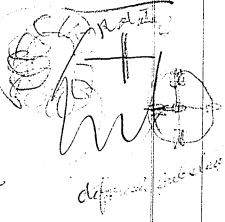


Lithium Potassium salts
of tungstic acid oxides insol
in alkali

BiO_3 Li K
CO_2 Li K
UO_3 Li K
MoO_2 Li K

Cobalt & Ni
Cobaltous Hydroxide
Cobalt Nitrate
Barium
also Barium carbonate
50 grams Ba(OH)$_2$

Dry Condensation
Leaves & Sand and
say 5% or all from
Organic Chemicals
Para Cont. reason
[illegible] use any
Lecture the Tiny of
Inorganic & Organic Chem
will definitely use
& use small 1 1/4"
plates on Hot plate



different indicators

Make a wooden rounded [illegible] reduce on wooden [illegible] paper glue.

Experiment on packing Cement in bags paper bag hydrocarbon etc

When testing a Water plane sink a bag roll coupling 3 3 bags its water of Cure length of wicked Curve deflection apart –

How would it do for Fulham to sell all qualities mixed in [illegible]

If I can get a principal
[illegible] sensible enough
Count with [illegible]
Record under [illegible]
[illegible]
[illegible]
with [illegible]

A dead neutral Doll
[illegible] KCB, [illegible] Chairman
[illegible] on [illegible] of
KCB [illegible] remark

[illegible] in Company
[illegible]
[illegible] Group
[illegible] not use in
Cylinder [illegible]
[illegible]
[illegible]

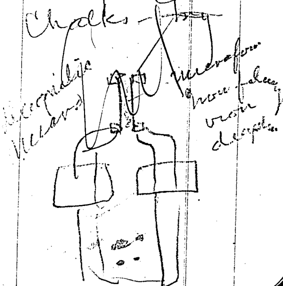
see if [illegible] a little [illegible] with [illegible]
[illegible] Chemical
[illegible] 2 [illegible]
[illegible] [illegible]
the [illegible]

possibly both with
[illegible] with [illegible]
[illegible]
[illegible]

See [illegible] Millaleung
[illegible]
[illegible] £2000
to 1 Millaleung
[illegible]
[illegible]

Use a chalk soak
it slightly in
an oil or liquid
used in wash When
dry wet in Reo
wash with KOH
if she if get results
possibly wants saw
p elements ...
+ high Res
Also try Very
High Volt +
may liquids non
Conduct strong
Currents to see if
works without
KOH, —

Wet a chalk with
KOH Containing
a Colloid like
Ferric Silica
Albumin Gelatin
Caramel see if
it improves both
Chalks —



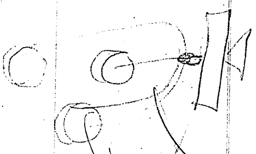
[illegible]

Sec of [illegible]
has a [illegible]
action,

Manuscript about
Adolph Hansen
since only [illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

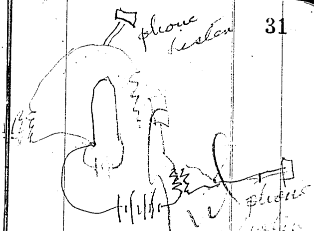
Between poles of
an electro-magnet
Magnet with power
[illegible] in [illegible] room
[illegible] crystal to
get light [illegible]
X ray crystal [illegible]
[illegible]
[illegible]
600 [illegible]
[illegible]

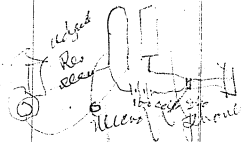
also [illegible]
between poles of [illegible]
[illegible]
[illegible]



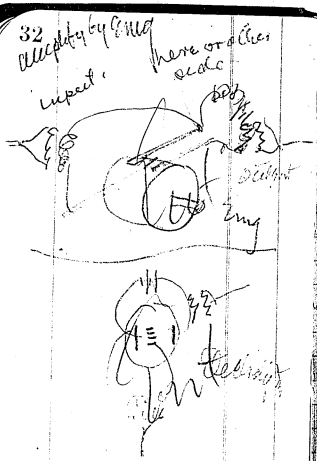
3 water [illegible]
3 chalk Emg
3 sep phones

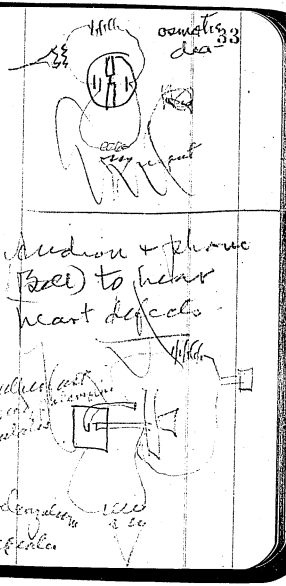
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] by
[illegible]





Bring to high temp & then
telephone bring still
higher when 1 receiver




Audion + phone
(Bell) to hear
heart defects.

See how much can
strengthen Cement
paper bags by
rubbing on
something or
oily and on some
part.

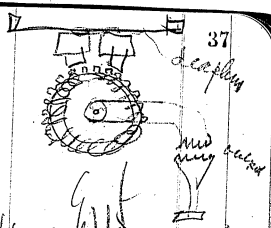
Test possibility of
Emery cut glass at
Clark

Do not forget to
using very hard water
Vinegar
bag will bring
them out

In a dark Room —
powerful Magnet
pointed poles — Revolving
holder, Cut in Crystal
also Crystals with
Crystals in them
Medicine Containing
from Mr Co
& other impurities
Tells fusion in
Act

Drums cut from all
kinds of Crystals —
traditional proto
light gentleman with
[illegible] by it is
the explosion

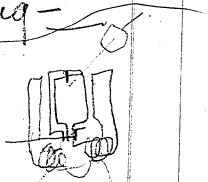
Longitudinal Coupla-
one end hug by X ray
Radium —



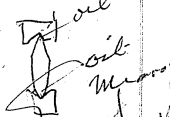
Vibrator field magnets
armature fine wire
high velocity
alternating

Insulated of a
Mag dot Magnetic
Circuits not a
Rod for field mag
& many turns
foundry rotor also

For amplifying moderate vibrations with audion only use no non Cores or Ebug —

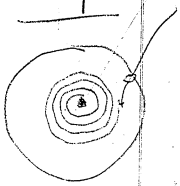


Receptive Vibs put a break on a high speed motor, friction would grow form a fuse



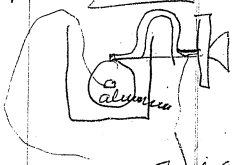
An acoustic cable probably work OK with an adjustable Resonator for best tone of arm of screw propeller with audion

Make Cadmium A4
" Cobalt "
use of Voltage in
OK for Auto
Starters, also
low temp -



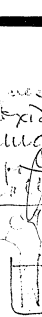
Heated Conductor
Carbon put on
with Vernier
(Electrical) measures

Use Resistance &
then use High Voltage
battery in series
for transmitter



Aluminum Redfern
would best
legend building
with Allen
Remove legend
or not a deal

Magnesium ribbon
burnt & oxidized & reduced
in Engl.
perhaps [illegible]
in Mexico [illegible]



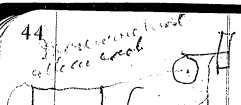
Liquids
Amphibiguous

Dated [illegible]
[illegible] 1012
acc of Rick [illegible]
[illegible]
[illegible] Dalaqua

Vac tube

This should [illegible]

- Lead battery —
now shrinking
Positive lead [illegible]
sulphate [illegible] unknown
— Silica hydrox —
[illegible] reduced
[illegible] reduced
[illegible] needed
Electrolyte —
Balloon — Centro
Glasses = [illegible]
[illegible] stuff burnt by



If now have surrounded
Electrolytic Cell
& that a Current
passing it charges
it like a Condenser
then

Pump other
instruments slides
upon a

Manufactures
of another point of
Elevation of water

Pulsimeter
detect waves
or a ray proceeding
from one of the
poles

or Crystals in clock
towers or Pulsimeter
or Eiffel Tower
glass slide

visibly different
phosphorescence
all kinds — & shift
to cause bright
effect to be observed &
these become visible

It is likely that if a
make a great number
of phosphorescent
screens X & Rontgen
[illegible]
these will be found
[illegible]
[illegible]
rays by being

to demonstrate the
light. especially of
ray is of lower rate
of vibration —
Pressure means are
are already [illegible]
[illegible]
Experiments recent
brought by Wood
[illegible] work —
also chemical
rays which have
[illegible]
[illegible]

Spectroscopic
[illegible] tubes
[illegible] use of [illegible]
[illegible] —

Pure Magnesia
in Cleaning Bronzes
& other Ornaments
Glass Hand Vases
Lithographic Lake
Cathodes for
Superphosphate
Sludge Washes
Precipitated
or Silicate Magnesia
Lime Barr & other
Metals –

Carry a 0.100 tube
Platinum –
Also Mg & thorium
& Y. ray tubes –

10 Lettering tubes
10 Resonators & a
worm with Zinc
tubes shielding
or possibly 10
brandes

Fused Tungstate
of Lithia should be
better than Lime Impurity
by Be

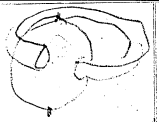
X Ray, Radium
Mesothorium should
with proper salts
in paper with
phosphorescence
give red by the
other Chemical
paper - Chemicals -
for XYZ

Hatrive - which op

Earth

perhaps Wolframite
will give scintillation
with XYZ

Another Detector is
a Spark Coil, points
adjusted just on
verge of sparking
Act ray strikes -
Get a Gold leaf
Electroscope -



Press loop firmly
Microphone between
but loops [illegible]
metally [illegible]
use [illegible]
phone -

Coil

Thermo Iron &
another metal [illegible]
Alternate Current [illegible]
galv -

bulb like Thermometer
only larger & colored
[illegible] iron [illegible]
light X, Red Cord
around the Lobster
with Microscope

Try 6/4 para on
composition time test
Try 6/4 Rubber no
[illegible] high
BP & para - resol
also, with Sulphur

Try treating fabrics
or yarn etc to get
polymerized Elastic
[illegible] resol
with Burned
[illegible]
[illegible] Urea & Urea
also P_2O_5 in acid
etc

Also, Organic Salt
to harden Reduced
& Tung Oils polymerized

Make the WO, Mo
Cr Ur & other metal
salts by precision in
Salt.

perhaps with Cobalt
Chloride after exposing
to the rays of
Energy [illegible]
do not give
light may give
other rays

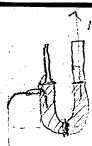
Coin nonwater
subjected to def
rays may photo
direct on them
black paper

Crystalline tissue
water + organic
Liquids which
powerful thermo
(10) alternation
elastic
Absence of
acid increased
thinning of
weakening

If in fusing any
Temperature time
impossible to be
put full use
temperature of the
impurity

two glass rules
defraction grating
one behind the
other parallel
one to cause
water to
interfere
Concentrate Germ
on thermo

Use an adjustable
rate condensing
but variable pitch
& adjustable for
Velocity. Then
with increasing
rate from see
adjust Constant
rate to make
64 mils or increase
& decrease Volume
all under control of
Revolution



Earth = [illegible]
will [illegible]

Patent ~~Semi Condensing~~
the Condensate before
~~counting~~ —

On a good cylinder
for Eng [illegible] use
KOH with different
oxides the decision
in it —

Bowls made of [illegible] like transport [illegible] with middle [illegible] one side has [illegible] [illegible] than the other [illegible] light passes through [illegible] [illegible] absorbed in one direction the other the whole wall [illegible] like a [illegible]

Could connect to megaphone or internal light or other [illegible] or [illegible] mirror

Rig up a magnet poles against 1st audion bulb & with key & sufficient number of cells see if hear it on telephone 3 days also see if other rays will work when shutter used

x is closed
Magnetic circ
magnetized

this covers the 7th moment but leaves no free lines use no pole for magnetic [illegible]

discharge condenser between balls using Induction Coil & Secondary rapid working Chronometer [illegible] following letter to Scott photography

Formula (8/13)
Developing Sol
1/2 lb Sulphate Ferrous
to 4 gals Distd H2O

Clamp Crystals at Each end — twist one End by a Vibrating lever to give 100 or more Vibrations per Second & test for Rays also ~~[illegible]~~ connect Ends to Ray instrument & insulate & also direct metal Contact at Ends

Introduction

Then dried in front of
Carbon balls - &
gas-lens -

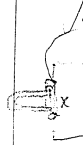
Condenser made
with Vacuum of
Oxalate of Calcium
(10) coated on Metallic Lenses
& Metals -

X ray etc at distance 65
photographically defective
to microscopic structures

EMG - with aqueous
but expensive above
20 only for pure in
powder, 5% Silicate data

Secret water, phone
waves so high in
frequency sent that
is still perfect of
Audition on magnetic
system too great
Use Microscopes + EMG
without microscopes

Make some Copper Cellulose sheets for wiping — see if acetocellulose is electrolyzed by Vacuum sheets



Bell Recv or Microphone & Audion x a Metal diaphragm — Other on electrolyzes the throw of the

Molecules for plating of a metal [illegible] Vibrate like

Ray from Electrolyzed Metal Cathode in Silica where composition [illegible] Lucy time to Compensate also in Combined Vacuum & other Substances

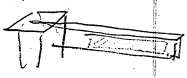
Prepared Sulfides for [illegible] Experiments

Fredrick make Emaj new
Bailedum [illegible] to 3 inch
[illegible]

200 almost premium
Carpets for [illegible] Sheet of
50 100 150 200 [illegible]
300 at 20% Rest,
old Expunt.

Sand Water [illegible] of
20 pk [illegible]
1/2 to 1/3 – better.
Urgent [illegible] water
might be better [illegible]
[illegible]

Dimondsco try Clear
Lead & Rubber for dure
[illegible]
[illegible]
5 sheet



Quartz etc pressed
Metallic [illegible] on
Lock side
Vibrated sands wear
of some kind out

Try Sodium Amalgam
of most plate Cu
to Copper & Cu plates

With Chemical Copper
Recording Cam
make it practically
accumulators by
slow movement of
Record tape Sound
very slow sending
hardly any limit to
sensitiveness

Also send into a very
small storage battery
& discharge Chemical Well
Gals. Say 300 Gallon
& Commutating robot

Roman Letter Wireless
5 tunings & Quadroon
& Chemical Copper

See if Condensed
Sound of powerful
Sound Record
will photograph using
a + O

Try P.O. Dept of N.Y.C.
Wireless Telegraphy
if Nyd not Fe Com

Electrical dish containing
Quarter [illegible] substance
to see if more or less
Quartz could be obtained
by electrofusion strongly

Relationship in bridge tying
all metals & see if any
have higher or lower temp
than [illegible]
also their oxides ?

Weight subject a proof
A4 giving say 90 amp
pulse to pressures in
North, Hydraulic for
say 10 hours to see
if Model will respond

Take a fully charged
iron socket put in
Sulphate iron & plate
the iron out & see
what's left, also
plate more iron in
nearly work &
Test for capacity

Plate Ni on fire tube
French form as well
green & light iron
Ni Moly Bch wire
well & mounted
see if compression of

See if Cyl can not
[illegible] used in
Lacquer

~~Lacquer~~

Fund of educational grounds around certain towns
Remove Spring
Rectangle around museum & Lyceum
Etc

Find out if City work by Village or Government
Think to Village -

Wireless Phone Best.
Phone 100 millivolts
of an amp -

Microscope in dark
Def fluorescence Infolenda Etc
Micromiles to cause it
to approach close to
see scintillations

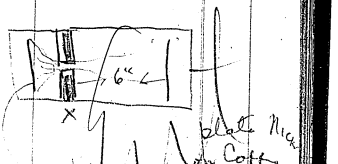
a P or N charged
insulator that near
a Audion + mount
phones vary the
Current + be heard
in telephone (12) feet
near No 1 input Audion
Can school it to +
room to make a
note Think
~~Class in Vbat~~

Hold [illegible] Rod in over the
pen of Pilla - dotted X Ray
see if any change

Spunk gap - use Vibrator
with diff. adjustment on
Elec. pen & X Tube - see if
rate of beats on Tube alters
all kinds of things, can be done
Think at X a vibrator should
be put in
Plungers may be
worn in iron
Magnets - See abt

Hurry Crocks for
Auto Engine - go see if

Hayes get another
Bumper Cant find the
one Have



X brass insulator with
Round hole 1/3
+ 1/8 long -
see if Can get
Circle of Copper

Take Cone stalks on Telefon line use Carborundum detector across line — to discharge stalks on Receiver waves, without harm during waves set up Circuits & Impatence Ck + Ling

old Iron Cook 4508

Load 2 packets made tube scratch-crystal + 2 more scratches much —

Reg Bat non perfects
Taken out of test cells
after going bad + after
250 ~~hours~~ Run load
bad from back of use
Cells 1630 1639 — average of
10 —

Before coming out of Cells

	V	%
Went	896	—
8th run	2289	3516
15 "	2540	3796
16 "	3047	4655
17 "	3137	4709
18 "	2936	4431

Sensitiveness of best head phone

60	vibs sec	620 millionth of volt
120	"	290
180	"	170
300	"	60
420	"	17
540	"	8
660	"	4
780	"	1.1
900	"	0.6

800 sec 1 millionth of volt

Enthusiasm 100 of sec gives deflection sufficient for the coupling with $\frac{1}{10\,000}$ of volt,

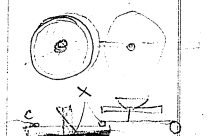
Most sensitive [illegible] volt
set up per sec of time,

Sensitive galvanometer 11.000 ohm
10 sec swing period 9 divs deflection
with less than $\frac{1}{10\,000\,000}$ volt

Capillary electrometer $\frac{1}{10\,000}$ volt
Telephone relay ~~[illegible]~~ 1.4 V 100 ohm

Make some sulphide NaOH
Upno - Crucible up to same
size as our [illegible]
Then Oxidize it by Hydrochloric
& watch it [illegible]

Use our dead money
describe what a cell
or battery is NaOH —
also H2SO4 —
Electro to see if can
bring out electric
possibly electric
Judge it to get
some say 50 or 100
Towards Ohm
50 — also specially
hard lumps —



More or less 22 Cover
Electrolyte surface + this
is discharged by C or N
Thin section, or direct
This is not alternating
S
1

Mendrecaft where is —
the Encyclop Britannica
p 608

Dehydrate FeSO4 Crystals
by Melted CaCl

Cast red iron 3 hour
roast, Pass 100 mesh
with solution of ~~Sulphate~~
~~Nickel~~ Nitrate Nickel
90% Iron 10 Nickel
Bonito agent — Reduce
with H The Nickel & Iron
make + conductor
all through on Cathode
+ rare Tail End cover
up a grow greater
Capacity

~~Dehydrate screened Mg SO4 in Vac at gentle heat.~~

~~Frid Oil polish the surfaces of Ebug Cylinders by [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]~~

~~Dissolve Cook the Chemicals and Resin under pressure of 60 in vacuo at 500 F. also by grinder pressure~~

Ca WO_3	20	
Al hydrox	30	
Mg "	30	filler
Zn "	26	
Ca Fluoride	2[illegible]	
Red HgO	22	
Calcined HgO	26	
Mg Flouride	20	Smooth
Sr Oxalate	35	Gray crystals
Ca Chromate	26	crumbles
Ca Oxalate	32	
Ca Chromate	20	
Black Stainless	28–30	
Sr Borate	28	
Al Flocom	24	Crumb
Ca Oxide	32	
Ca Carbide	34	Fingerprint [illegible] [illegible] [illegible] [illegible]
Sr [illegible]	20	
Sr Carbonate	20	
Ca Oxal 500 at	26	
Sr Carb 500 at	32	
Sr Oxal 500	32	[illegible]

get 2" chunks of minerals
Containing the Rare Elements
Columbite Samarskite
Etc to test for rays
not now but will by
present instruments

Cupric Oxychloride
usual in KOH for
detonate

Marganate Barium
dilis

2 Molecules Boron Trioxide
+ 3 molecules Lead Oxide
fused gives a glass
Softens in hot oil

Method forming very
large Crystals
Chem Soc pd 1879 352

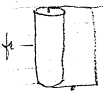
Have we a Tune in Lost
"Call me your Darling eyes"

McHayes what Opera:
I have heard Heard but
never heard.

Speak to Muller about
Hand recommended by
Sand. double
+ [illegible]

Make some conducting Selenium & test point for recording like Selenium Also Conducting phosphor & Sulphur

legal Dept get copies all US patents Eberhard Pictures -

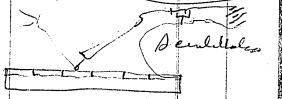


Approx. Relation with earth

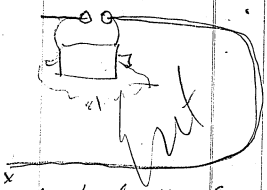
Limits of audibility of Telephone Diaphragm is an amplitude ~~[illegible]~~ is 6.3×10^{-10} CM

Encyclopedia Brit [illegible]

Helium Recording apparatus [illegible] telephone [illegible] in water [illegible] depth



Scintillation see if there is a bombardment say on Zn Sulfide scintillation shots thru Diaphragms + Electrophorus



See effect of the channel vibration at end of long wave or Ray

Ocean - next to land in summer temperature are very sticky Mucilaginous plankton with accumulation of debris

" filter water & get sediment, Tests

Use Gray's Lamp for Sharps Axe to crack off the edge of the train due to the [illegible]

Build fire lighter for round trip of see anchor to stop

Sludge acid from Petroleum treated with fuming Nitric gives a resin floats

Mesh this & compress into tube cylinder when heated expands to soft bits. Observations respect lack for blind

Varnish

1/3 lb fresh fine Coumarone Resin
mix & press warm
or press & bring up
plate to melt & add
in Coumarone —

~~Add to Flow~~

dilute with
2 pts two bottles put
a little strong oil in.

Try fine flour Sulphur

A falling body due to
gravity & condition of
observing instruments
at right angles
should indicate the
energy in gravitation
[illegible] but says
it should [illegible]

Fluorescence + phosphor
are due to strains in
crystals
Hence Electric magnetic
Heat + sudden pressure
Crystals which will now
do not glow + show
+ see delay which
after straining &
Exposing to light heat
Rain + X Ray

Show slides of
phosphorescence, like
light that you have
1st plate placed then
a 2nd plate of other
material, which
phosphorescence
on them removal
plates they remember
all the light &
giving store bundle
powder —
Fluorescence phosphor
+ the other ray pass
thru wood & stop that
closed to the light
& then the end of apple
pass thru & down

Remainder of Experimental
draft from 2 drawer
Tried to make to give
Repulse the Bed gives
Wants to swing down
Down [illegible]
Not results with
instruments.

Bismuth Bi
[illegible]
[illegible]

Diamagnetic Crystals
repelled by Magnetic
Lines, it may be that
the Diamag Crystals have
a system of lines quite
different from Magnetic
lines of Force
If Bismuth rods were
made a diagram of lines
of Force would show
something different
from Electric

Made 4 pairs of 7/2
packets with Brass
Kind of metal, also
Conducting Wires make
test Cells for Standing
Cold -

Wednesday 10 Wilder
Says Eb I am going
to pass Records
Wednesday

go com to Studio
& Cut Bell of long
horn & lengthen it
to that extent

go com the 500 99
Records put out sends
& stopped playing
them & played
same as of & commenced
heard them ~ 25 in
Cut

Need Radio Chemist
35 work - Make
it away

Some Wire flow
Gardner only
Needs 2" frequent
on Pinedo Hallows

See if any Crystals will show fluorescence by powerful Light from Spectrum & Sun or by exposure to Heat X Rad, Mag Elec X-ray etc or ~~that can~~ in Dark room with photo or look Electroscope

Alternately Cannot throw Crystal in Zero Light.

Carbonyl Sulphanilic acid Crystalline Screened to see for Microscopic other Organic Sulphates See W Stuart Walling on Walls Marked. & those which will be very light having Any Aluminous etc in Crystal Heat code Tetrahydrate — Crystals Uric Acid + Urates Carbonyl for Microscope

test for Selenium in H_2SO_4
5 pts acid 10 water
10 pts of sulphurous
acid water, Selenium
precipitated rapidly
from Uranium
Can detect 0.003%
1 pt in 10000 ?
a Current of Acetylene
will also throw it
down to more
delicate 1 in 100000
if Acetylene has some
HCl it comes down
quicker.

HCl must made
free from H

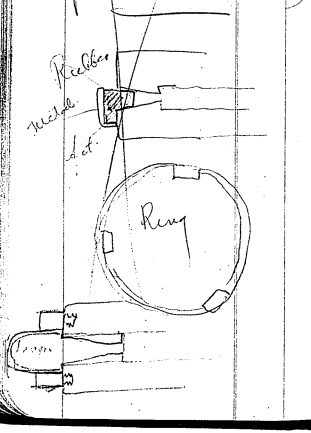
see D Bidwells paper
in Phil Mag on
Selenium (5) 31 -
250 256 —

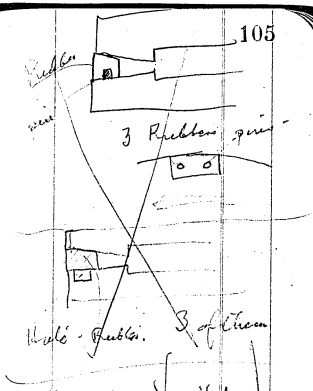
They force Selenium & Elements
Carbon plates & cool
slowly, get permanent
res after 48 hours

try indigo for chem
paper - dis in H_2SO_4

try benzanthrone test
white ppt added to
a Color for 0 ounce

Alter a moved with springs in ring etc to keep moved apart till heat





Bismuth rod in Helix powerful alternating current use of Rod and coil
Cause glass flare
etc or alter above in (decay)
Strength of glass or flint of high power flint

16/ 1894

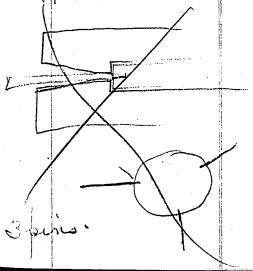
Made lime expands 1½ times less than sulphur — make a joint piece which will work first

Sulphur	000183
Ox Fe	000016
glass	000024

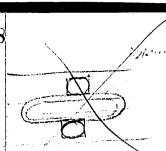
Helium in front of slit of Spectroscope [illegible]

Lead bought be very long

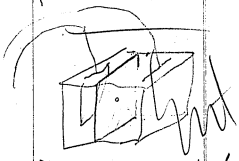
Weapon No 4 ½ inch rounded with 1 lim of Lead [illegible] — It must have of changing [illegible] time [illegible] also without [illegible] Roosbam [illegible] should have [illegible] about like 5 inch [illegible] of Submarine at ½ [illegible]



3 bins.



Films on glass of all kinds of things. that go to make up Metals. Metalloids Selenides Tellurides Metallic Selenides see how affected by Light heat, X Ray X-Z



Insulator + 002 hole
Deposit on platinum, acc.

deposit can be made
disymmetrical by reagents etc

Also Moore + Cook cleaned platinum pieces in Acid they are levelled or can be levelled — cleaned lead, shear or bend under pressure

Charles + see that in arrangement with T that future he can transfer any big to a Computator

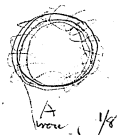
c of wedge b a relay with powerful current intermittently also alternated —

Different liquids, + different methods. as to date. Use xyz measurements length of cell 4" + one of 3 ft —

In listening to receivers,
find best position for phone
to stop echos, also remove
back also Bell part of horn
& Extend small point out
Also test of a tube instead of
funnel shaped as small end
of funnel will be loud
Enough — also try, audiophone

Have audiophone fixed up
with Extra diaphrm &
Gravolona —

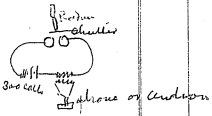
Charles & Orrand about
more Advertising



1/8" soft charcoal
iron, insulated 200 ft —
Served with 1/16 Copper wire
2 or 3 layers insulated
Poles A B at a distance
from Coil internal &
alternate Current
Use also Condenser
Connect all kind
instruments to A B —

Get best gold wire also special
Electrodes used in Platinum
etc,

Receive and test electrified bodies to & from Audion bulb when operating



+phone

If there is resonance on open circuit it may be cause of broadcasting [illegible]

Telemeter

Try healing Reg rod
wax with sulphurous
acid & of medicine
Make test wave & test

Test New Record with
water alcohol
freezing - Heat

Kellow J Aubscribed
5000 Lab Loan
East Orange

In writing chief of records
Note % of use of energy +
accompaniment
Put rule up using only ear to
lose weak arrangements
+ head with ear clapper +
distance for Loudness

Lampblack bottom
put in sugar, asphalt,
etc in lampblack
by wash solution & press
bottom & bake in
charcoal with
pulverizing so they
will be held together
by carbon but so small
that its only say 5% of
the whole mass of carbon
dust. Then use carbon
in gas alone

Also granules of these
dust broken up &
screened to size —
& used in gas alone

Dimroth & Twin down
dog are reg blanks
used in factory. 1/8 less
dia varnish seed was
a point see how they
act.

Maxwell-Vandy Fuller
if you come to use
recordals let me know
the type of records you
will use —
What records do you
use on long tubes.

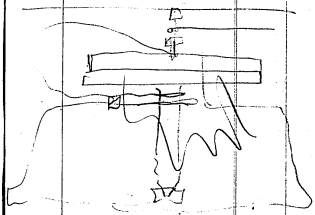
Make wear test on New record to see if Varnish 1 Coat stand up no Cracking, b Making away & quality of varnish after running

Wally to determine how long after block can use + if Dump out Reg is OK

Make New Block MT in cylinder by Moulding on Squeezing Varnish + press

*

Find out what being done with design Cu Ni working Moulds + without pressure



Disc-pass Elec
xyz Elec note charge
friction ground section
tight

got Thermopyne buttons
Lampblack powered in
180 mesh acrylic, brew
to get conductivity —

Dally - If a second
black well squeezes
out 1/8" dia
what is necessary of
preaching with such
great accuracy? —
Print at 800 700
600 500 400 300
~~200~~ 1st print
700 1st 300 second
& 400 3rd

Order filter ark
put on Nickel plating
& glass new set to
leave them on & keep
pressure of Tonic —

Its doubtful if
iron can be kept in
furnace condition

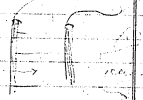
Try flask at Fossy
take on dark with
iron in it — & see

Ohmyhaos 8 c/o
½ in wooden
Ohmyhat 2 c/o or
less

Get a ni dissolving
before Cu put on
a dissolve a little
of Cuck to bring
out colors a
Cloth of Tannic

also try
some ni ammonia
Sulfite ni
Reg Dat with
a yellow iron

Find out name of man
who got out,
As Belhorn
as Strauss would
play it.



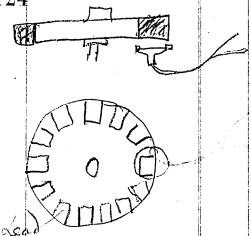
Make a cathode
[illegible]
a very heavy [illegible]
[illegible]

Put 2 E valves on
anodium backing
Each other so no
Current gets thru
then try X ray
instruments to see
if anything comes
thru —

Put Crystals in non
Soluble liquids
Subject liquids to
strong Sound
waves or Electric
stream like condenser

with AC - high Volt
see if any rays Come
from Crystal & tells
common it liquids
that waves come
out & test

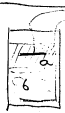
Try change the
Photric Collodion in
the bath to
not Collodial
to permit filtering
Easy —



Wheel to give 175 to 200 pieces of lead or tungsten metal passing over a diaphragm perpendicular to Newton gravitational stresses into suitable sound receiving & electro microphone & 3 large electron attraction orbits of the lead blocks to the earth should make a complex

Perhaps it should work edgewise

Cinnerone resin Cinnabar polymerized at 160° Cent (via Par Hsang)



Jar 2 liquids
H_2O lower b
Petrol Benzene
2 electrodes high
Voltage DC, 5 volts
[illegible] magnets
diffuse into each other

also make to an attached dry te
also colored if possible

Group Tuning as applied
in form of a clock
not affected by
Copper Deposition
for Emg

Osmos flow
or

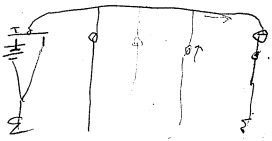
Patent Amplifier

also another with
with Condensers.

Also another with
E Valve to change
Currents in Circuits

CP Water, Aluminum
Electrodes, Sealed
well cut as an
Recipring Condenser

yellow rump
white throat
white wing & tail
pointed bill - sharp
very large eyes
deeply forked tail
slate colored head and
back



2500 (
24
10000
5000
6500

7 | 79000
11286
28
90284
22572
8
3168

50 | 316000 (630
300
16500

Notebook Series -- Pocket Notebooks
Notebook, PN-18-00-00

The one dated entry in this pocket notebook is from May 1919. However, the book was probably begun late in 1918 or early in 1919. It was used by Edison to record ideas about business matters, experiments to be tried, and other tasks to be performed. Many of the entries pertain to Edison's idea of using lithium hydroxide in the Lalande primary battery, his interest in locating new sources of lithium, and his plans to construct a lithium hydroxide plant to supply his own needs and to meet the growing industrial demand. At the beginning of the book is the address of an unworked lithium mine in South Dakota, along with a notation to "increase Capital stock Mining Exploration Co to pay my expenditures at Par." There are also entries regarding mica mines in western New Jersey, as well as Edison's renewed interest in the regeneration of used storage battery components and the development of a process to extract potash (used in batteries) from feldspar.

In addition, there are numerous entries relating to electromotograph ("EMG") experiments and to the use of the device in the chalk telephone. One entry contains a reminder to "look up old note books for all notes on chalk phone & copy," while another mentions Edison's plan to "retry the old Etheric & use phone & chalk phone." Also included are notes on disc records and test recordings, along with entries indicating Edison's continuing interest in submarine detection and other military topics. The inside front cover is inscribed "Ent in final book May 6th 1919." The pages are unnumbered. Approximately 160 pages have been used.

USAID PN-(18-00-00) ★2996

Sent in final draft
May 6th 1979

Mebulluorgan Co Mining Eng Illinois
Name Old Etta mine
owned by

C H Karnman Hill City
S Dakota

not being developed

Increase Capital Stock
Mining [illegible]
To pay my Handkerchiefs at
Par,

Jesse O Harper

An Copper [illegible] immediate
between Cup & Chas
Can be obtained [illegible] Reading
Cup on RH or Kl [illegible]
G Kruse Dec 17 1893

(57)

Gypsum acts as a flux a
bout as much of Caf as fluoride
Cryolite is corroded

New Reagent for Na, Mg + Al Salts

5 pts Crystalized Tin Chl
10 pts Dissolved in 200 cc
much of a coal of KOH
[illegible] as well
[illegible] nearly but not
completely a clear solution
[illegible] standing
[illegible] more
[illegible] 5 pts sol + 10 pts
Hgl, set aside for several
hours, or until [illegible]
any liquid containing the
dissolved bases of NaOH
or [illegible]
NHgl [illegible] not the same

Possibly Spodumen heptafluorate
+ Amblygonite needs Caf,
also NaCl mix coal with it
ground fine might help

Hydrogen sodium Carb is
recommended for decomposition of
Silicates in place of Sodium
Carbonate or the Potassium
[illegible] of K + Na Carbs

~~My procedure stops~~
~~for the present~~

~~[illegible] as [illegible]~~
~~more NaOH to make it melt~~
~~Still [illegible]~~

Metallic iron from our Iron
Mycaceous dissolved out by
boiling Mercuric Chloride
which dissolves the iron
& leaves Fe_3O_4 Fe_2O_3

Beryl from Mesa grande
has from 0.46 to 1.68% of
Li_2O

Compounds of FeO_2 with
Strontium

Other mixt of Cono solutions of
Ferric & Strontium Nitrates
evap to dry & dehydrated
residue ignited at 100°C
[illegible] with HNO3 in order to
[illegible] analyzed
Strontium Compound with
Ferric & Lanum hydroxide
brot up to 400°C

in oxygen. But alas slowly
acted by nitric oxides given off
O, but may be soluble
in water.

By ignition in Sulphur Nickel
crystal from Lonsonite, Haematite
Xanthosiderite. hydrohematite
goethite, Crystalline & amorphous
also ignited iron pyrite
Used for Li_2O

Iron labs [illegible] rapid qlx
determination –
Lithium Soaps
Lithium hypochlorite Dakin Sol
for treating
[illegible] for [illegible]
Titration of Acids in Labs

L OH, use crystals of any
ammonium sulphate salt
put in NaOH with or without
Aluminum & let it stand on
stove – boil. to use a copper
salt which ~~so~~ will form
an insol salt with NaOH or
KOH. Thus to get slow action
[illegible] of the
[illegible]

L OH

Try making Crystalline
Cu OH by precipitating
the dry salts grounding up
fine with ice & in alcohol
Thick glass to melt
slow –

Try 3 glass 10% CuO – Thru 180
64 glass, & bring to very
bright yellow, ~~[illegible]~~ [illegible]
by drop & cell –

Put a yellow heated 4 glass
into melted NaOH
for 10 min – take out &
put in water –

Also break up in $\frac{1}{4}$ @ $\frac{1}{8}$
chunks & try – [illegible]
[illegible] to [illegible]
see if [illegible]

Beryl – Glucinum Salts
great [illegible] of Extraction
of [illegible]

Lead or other glaze 200 mesh
moulded by Hydraulic, can
probably be burnt in clay
holders & kept alright to
take place of hard-trubbed
in Alkaline Cell specially
if loaded with Ba Sulphate
or pure granity —

Resin from Balsam Canada
is insoluble Alkalies

Sandarach Resin is not
sol in Alkalies

Pigments - by precipitation

Brunswick Green	Green
Sulphate of Lead (Mineral Paint)	White
Chrome Yellow	Yellow
Red Lead	Red

Oxidizing linseed should be
heated to 300° @ 350° for
and the Dryer added, slowly
2 to 2½% carbonally
should not dont add it
bottom & burn oil in
The heat & oxidizing [illegible]
in the oil. Try Red lead
+ [illegible] [illegible]
Pb O2 + [illegible]
much [illegible] [illegible]

Dromedar Varnish some records with linseed having 10% of a Dryer P6 oz after thorough oxidation put on the Red Varnish with Red & also Chromate Lead or Red Lumpblack also with some clay –

Also a layer of Dalby Clay & Linseed before oxidation then oxidize & put the Red & Graph. Condenito Varnish on gives a cushion –

We need 130 tons net 3% Li_2O ore or equivalent per month from mines based 1000 cells daily & renewals,

Dalby

Try Experiment on small Mixtures or mixer hot of oxidizing pure Linseed oil ½ & Ratio ½ until it gets ropey. & then remove to then work out & put in Clay with proper amount of the dope & powder up again & oxidize solid –

If not possible in mixed use one of the Cells pots with Clamps & hot 300° fahr

Colloidal Carbon action 2 gms Increase 2000 H_2SO_4 24 hours then in 500 water, then changed to acid red by SO_2 & then in solution to get assorted see p. 198 Chem Soc Bibliography 1914

(15)

Cuprous Oxide [illegible]
Dissolved in Ammonia
+ add Ammonia yet under
Cuprous hydroxide separates out
Ammonia [illegible] in [illegible] ?

[illegible] Manganese [illegible]
[illegible] Manganese [illegible]
[illegible] Manganese [illegible]
Manganese-Manganate, Wad

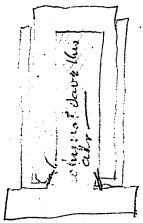
[illegible] Jouvenaline, Barbaloin
in Bicarb. [illegible] in [illegible]
Kamala between Calamari &
San Borja - L. 0.56.

When buying Chalk phosphates
+ have a
small hole in Lacho from
Chalk to [illegible] Ammonia
it will [illegible] Mass
[illegible] out of [illegible]

Harry Miller who do
that get my reports
of personal accounts

Perhaps Lithia will
take Phos out of iron
L. not reduced by Carbon

Warner



See Warner about
wet salt & distilled
water - Mercurous salt

Iron pyrites. Corn plant
Kaliba 1/10 10 —

Solubility

	Cold	Hot	MP
LiCl	63	129	605
NaCl	35	39	804.C
KCl	28	56	772
Caesium Cl	161	270	646
Rubidium Cl	76	138	726
Gypsum $2H_2O$			900

	BP
LiCl	1360 —
NaCl	1490
KCl	—
Caesium Cl	—
Rubidium Cl	—

Sol al chlorides
Sol al alkalies
Sol al chlorid
Sol al chlorid

Orthophosphate lithium
Easily sol in Carbonic
Acid water
1 pt dis in 2539 pts H_2O

Ferric orthophos 1500 Bichromate
Ferrous 1000 Class

Ferrous Lithium phos Triphylline
Easily sol acids not cold
Accumpg to Rose

Ferric Pot phos. Insol acq
Lead phos " Vanth

~~Wrangles chas had to stroll not with Mercurium~~

~~practices heretofore about Nitrifying Mercurium~~

Important —

If Phosphate Li is decomposed by CO_2 gas in water, liberating phos acid — say Carbonate Li only Can't get concentration in presence of phos acid & then get Crude Lithium Crystals, which is very small in small amount of Water.

One analysis of Amblygonite

Phos Anhy	47.15
Alumina	28.43
Lithia	7.03
Soda	3.29
Potash	0.43
Fluorine	8.11

Ammonium Manganese Phosphat absolutely insoluble — see if so in Nitric HCl or H_2SO_4 Could decomp phos Li & precip phos out of so not def need

Walter Miller Mike

2 dec 10 lines Music
10 lines no music then
10 lines ~~[illegible]~~ and - Music
fairly good — for OK
treating quantities

Mack Mine at Rincon

San Diego Co of ½ m SE of Pala
Sec 25 T 10S R 1 W
San Bernardino Meridian —
1 1/2 m NE of Rincon Stors
in Int Canyon 2 at 1960 altitude

Get all patents relating to Potash from Feldspar

Dally Mark some
Lunnedell with enough
PbO for it to go easily
in several hours at
212 Fahr. –

Then was can may
Clerk make record
& Clerk & Chen
put me book at
212. + then Vancouver

Gypsum 1 part dat in 500 pts Ag
also dissolves in HCl.

Amica found in granite in
Cape Ann Mass –

Si	51.50
Al	16.70
Fe_2O_3	1.97
FeO	7.98
Mn	0.34
Mg	0.76
K	13.15
Lithia	4.06
SiF_2	3.42
	99.97

Very easily fuses in the flame of a Candle

Thus a clue for making Lepidolite more easily fusible –

Amblygonite [illegible]
generally sold on [illegible] Li [illegible]
18 mos —
Varies from 10 to 45 [illegible]
per Cent [illegible] since 1913
in 1908 $ 20 to 30 for Kunzite
[illegible]

Powder up Lep Lolite
then 200 [illegible] for ignition
then put in [illegible] iron
pot with [illegible] bring
up to 50 lbs pressure
using a gauge [illegible]
[illegible]

Dipluoride potassium
salt [illegible] in [illegible]
use heavy sealed [illegible]
tubes [illegible] pressure

Amblygonite stone 200
then ignite then
leach with hot chloride
magnesium — this would
form insol silica thing
by Chl [illegible] —
either the Cl precip
as [illegible] — or
[illegible]
[illegible]

Sulphate Li separates from
[illegible]

Sulphate Mg due 20 pts [illegible]
[illegible] Cryst [illegible]
Sulphate [illegible]

Carbonic Acid

Sesquioxide Al_2O_3 or ferric
don't absorb CO_2

Carb K Na or Li in 100 pts
water — if CO_2 used
must have 125 [illegible]

[illegible]

Phosphates

Barium Tri phos	Insol – sol d acid
Di "	0.01
Mono "	Sol
Pyro	0.01
Calcium.	
phos $Ca_3(PO_4)_2$	0.003
Di	0.028
Pyro –	Slight sol
Mono	4.00
Cupric Phos	Insol
Ferric Phos.	Insol – 0.067
Ferrous "	Insol sol d acids
Lead phos	0.000014 insol Nat
Lithia phos	0.04

Trig mixing Charcoal or the Leps 2 times charcoal + bring up on open piece of cracker or asbestos or dump in water -

Mg Phos
$Mg_3(PO_4)_2 4H_2O$ 0.025
pyrophos insol. sol acids

Manganese Phos
pyro- Insol. S acids

Tin phos Insol

Strontium
acid phos Insol SolNH4 Salts

Zinc phos, All Insol, some Sol acid,

Aluminum Phos Insol, Sol Al + alkalis

Water saturated with CO_2 dissolves the Li_2CO_3 more freely than water does

Li_2CO_3 1.53 pts in 100 aq (cold)
0.72 boiling

$BiCO_3$ $LiHCO_3$ 5.5
5.5 in 100 pts aq at 13°C 1.1

CO_2 100 aq dis cold 179 cc to
Hot only 93 at 20

practically 90 cc at
boiling temp

see of [illegible] leg to acid or
[illegible] leg [illegible]

Sulphate Al. sol in cold
water insol in Hot
water boiling throws
down [illegible] insol
Salt in all

Acid Sulphate Barium Sr Ca
Mg Sol water need of
Neutral Salts Alkalies
Soluble Water

Carbs made by adding
Excess of Carb Ammonia
to $LiCl$ or ammonium carb
with the sulphate
or precipitating Li sulfate with
aqueous Ba Carb & decomposing
the precipitated carbonate by
ignition - Li_2O not damp
by heat
Li_2CO_3 dis in 100 pts
[illegible] in [illegible]
[illegible] in 1.28 pts of Boiling

Put in tremblers Rag plates
[illegible] + [illegible]
test 20% + [illegible] in Exp to
note [illegible] in solution

~~Lepidolite Ker 10K~~
~~4 Li — then for [illegible]~~
~~its necessary to use~~
~~310 [illegible] 30%~~
~~[illegible] are [illegible]~~
~~100 [illegible] K 40~~

Anthrapurite
Ignite, dissolve in
HCl — precip phos as
phosphate Ammonium
separate the alumina
Residue after [illegible]
alk + dissolve [illegible]
all bases — by
[illegible]

Pneumatic test
Ignite, quench, grind to
[illegible], ignite, quench
grind [illegible]
test, then drive off H_2SO_4
by prolonged ignition
[illegible]

Test the Greenwhorles
in which [illegible] is now
in for Li

Pyridine dissolves LiCl
but not other salts & Chlorides
Etc

Phosphoric Acid.

Add Carb Soda only a certain amount. This will throw down Alumina & at same time the remaining phos acid will form a basic salt & precipitate, if Na_2CO_3 dont work try K_2CO_3

Phos Barium seems to be insol in water or acids 1 pt in 20570 aq – at 22.5 C. if in presence of Na Chloride + Na Chl Combined it dissolves in 4302 pts aq

Phos Barium is partly decomp when boiled with Na_2CO_3 or K_2CO_3

its insol in sol of phos soda or Ph Chl –
Readily sol in dilute Phos acid, HCl & Nitric with formation of readily sol Monosalt, thus it acts more readily in proportion as the acids are more dilute

Lime Bibasic phos lime
sol 1 pt in 1 million aq
it must not be cooled
[illegible]

Phos Ammonia + Magnesia
Sol. 15293 H_2O.
If water Contains Ammonia
Sol 44000 pts
This seems best salt to
get out phosph from
Ambligonite Alumina
Made usual by Evap
to dry & possibly dehydrated
or least -

Solubility not lessened by
any other salt than the
phosphates

Mason says it almost
absolutely insol in
pure ammonia
1 pt in 60000 -

Silicates of Alumina of all
Kinds probably have an acid
affinity & that the reason
they always contain alkali
5 to 12% -

Try double ignited Lep with
best ignition with Equivalent
of 8 grms Caustic Soda
to 10 grams Lep

Also double ignition
& powder, digest with
8 grams Caustic soda
fairly Concentrated
that but kept moist
So Na displaces Li
Then test, also add
water & exhaust & test
they add to clear water
HCl & test,

Make some fusions with ferrous carbonate reduced to ferrous,

also with dried sulphate of iron a

also Dried ~~[illegible]~~ iron hydroxide, Ca hydrox. Little Caustic Na

~~Also with [illegible]~~

Lepidolite.

SiO_2	Al_2O_3	K_2O	Li_2O
50.6	28	11.0	5.0

Water	7	fuses 2 to 2.5
1.5	6.00 =	

Averages

Ferrous 16.

somewhat 1.3 Mn

Lithia in defs over

Tan from 1.27 to 5.67

7 varies 2 to 10

Spodumene

Si	Al	Ca	Li_2O	aq
64.57	27.81	0.4	4.95	0.45

K	Na	Fe_2
0.12	0.80	0.8

Says fuses at 3, not acted upon by acids,

Amblygonite

P_2O_5	Al_2O_3	Li_2O	Na_2O	flux
48.5	33	9.0	0.4	11 to 17.5
Loader	4@5			

fuses at 2

in fine powder dissolves easily in H_2SO_4 more slowly in HCl.

Orthoclase Si 65 Al 18

Alkali 14

Basic Acetate Aluminum insol aq
Mono & di hydroxides of aluminum
insoluble acids or alkalies
Tri hydrox insol aq soluble acids & alkalies
Oxide insol aq sol conc H_2SO_4 + HCl

Phosphate Aluminum insol aq
Sol Alcohol + Alkalies

Thursday should make
Spodumen fuse easy
Tray 6 @ 8½ ~~then~~ above
10% alkali perhaps 15% alkali
[illegible]
Lepidolite

Si 51 Fe 30 Mg 2.5
Na 7 – fuses easy

Si 56 Al 12 Fe 11 Mg 8
Ca 2.25 K 9.2 fuses
easily to a glass (green)

(Cryophyllite, a Mica in
Granite of Cape Cod discovered
by Josiah Cooke Chemist
Harvard)

Si 51.49 Al 16.77 Fe 1.97
Mn 0.34 Ferrous Fe 7.98
Mg 0.73 K 13.15 Li 4.06
Si fluor 3.42

Melts in flame of a
Candle. fluorine not expelled
at red heat. Sol dilute acid
leaving the Si

When an excess of Ammonium Carbonate is added to a solution of Ferrous & Cupric Chlorides a yellow liquid is obtained which gradually deposits a mirror of metallic Copper

[illegible] cement on [illegible] [illegible] needles [illegible] $CaCO_3$ [illegible]

following hydrogen over [illegible] to [illegible] Zinc Remains [illegible] given On the [illegible] Zinc the [illegible] [illegible] Zinc is a Catalyst [illegible] with or without [illegible] R. S. [illegible]

From this it is obvious that there may be a suspicion that Carbon put in solution that will increase the amount of Zinc Oxide that can be held in solution —
Note the Carbolized brot. out by the Clay was to bind the 100 g also by CuO —

Perhaps Can put on a problem in Schools with Charcoal something that will precipitate the Zinc Oxide out & still leave the Metals to dissolve more Zinc

Tip Schuyler says bel red in Amyl Alcohol

[illegible]
NH_3 [illegible]
[illegible] not [illegible])

Then add various things to the Sols [illegible]
Insoluble Carbonates [illegible]
[illegible]

Get 3 or 4 [illegible]
good mechanical [illegible]
[illegible] capacity [illegible]
[illegible] than 120
[illegible]
[illegible]
[illegible] 2% Alkali [illegible]
[illegible] water [illegible]
[illegible] then take
[illegible] put in [illegible] Sol
& Run it, to see if
[illegible] will be Rehydrated

Lepidolite Melts 930° C
1654° Fahr

[illegible] [illegible]° C

Sol of Ni containing Chromic
Acid & Alkaline [illegible]
is Electrolyzed, [illegible]
for 50 hours, NiO_4 is
deposited
+ [illegible] Ni_2O_7

A Holland Compt R 1903
136 p 229 231

Heat the 3 in [illegible] with
Aluminum [illegible] for
[illegible] ~~days~~ the Aluminum
Replaces the [illegible]
Alkalies (use sealed tube 300 C)

Bull US Geo Survey 1902
Stevens

Decomposed Li_2Cl_2 by heat
Page Lubran Compt R 1903
136 – p 1245–7 Li Cont begins
Decomp at 600° C. Vapor
tension of Li_2O is so high
at these temps that it can be
completely volatilized

Leachwith
NH_4Cl also, Sol Sulphides
$ZnCl$
$MgCl$
$BaCl$
$SrCl$.
KCl.

Try Leach with
SO_2 also CO_2
$NaOH$,

Very dilute Sulphate + ammon
or such sol as OH used to
cast Cryolite on OH_2
Add lime in drops, to a
very dilute sol of the precipitate
over a period of days —
Commercial cryolite volatilizes
the most as almost soluble
in alkali sol —
Compt R 1903 136 p 1444–6

Try ignited [illegible]

Fuse some Orthoclase feldspar
double fusion + grounding
dec up in crucible with H_2Cl
like dec [illegible] + warm
[illegible] ground
some fine in [illegible] only
put on lime test both warm
some Cold — 3 Appls

[illegible] Bromide [illegible] is
[illegible] Acetone
[illegible] Chloride [illegible]
[illegible]

[illegible] 30 [illegible] heavy
[illegible] Co.

[illegible]

Ka Na quantitatively [illegible]
[illegible] Ca [illegible]
[illegible] no [illegible]
[illegible]

Printing & Working for blind.
use an ink with large friction
+ work by friction.

see if sol of NaCl we add
H_2SO_4. Can we get full amount
of HCl out of salt,

Try it on 10 grams Specimen

~~Chromic Barium Yellow~~
only compound Chromate

~~Naples Yellow OK.~~

~~Ultramarine~~ (Cooled)

	m p	100 water Sol Cold	Hot	S
Carbon CO_2	610	382	Very	Sol at
Calcium "	825 D	0.0013	0.088	0.1 in 100 CO_2 water
Lithia "	618 @ 700	1.539	0.728	insol.
Mg "	350 D	0.01	—	2.2 CO_2 water
K "	909	89	156	Insol at
Na "	849	7	45	" "
Li Silicate	120	Insol Boiling	S Decomp	Sol dilute HCl
NaCl	804	1490	1500 Cold 30	39 Insol Alcohol Ether
KCl	772	1500	28	56 Sol at Alcohol
LiCl	602	1360	63	129-24 at 100 Insol at
CsCl	646	~	161	270 Sol at
RbCl	726	-	76	138 Sol at
[illegible]	744	-	59	154 Sol at
MgCl	708	Red Heat	52	66 Sol at
BaCl	955	-	31	62
Gypsum	900	-	0.24	0.22 Sol at Insol
$CaSiO_3$	1512	-	0.009	Sol at

Magnesia Mixture

55 grms MgCl
70 " NH4Chloride

650 cc water
and enough Ammonia of Sp G of .96 to bring it to 1 Liter
1 cc precipp P_2O_5 0.04 grms

[illegible] rock 100 hours some [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] HCl [illegible]

War –

Scrap cartridges which sinking in water strike bottom explode. Time the period between time of drop & time of explosion by stop watch & listen in water phone. This will give the depth,

Get up 2 [illegible]
with the 3 grms 10 grms
[illegible] double powder
with 5.5 grams H_2SO_4
250 cc water.

[illegible] equivalent acidity
of SO_2 [illegible] cold [illegible]

Also with proper proportion
[illegible] H_2SO_4 to make HCl –

Atomic wt

Aluminum	27.1	Mercury	200
Antimony	120.2	Molybdenum	96
Arsenic	75	Nickel	58.7
Barium	137.4	Nitrogen	14.04
Bismuth	208.5	Phosphorus	31
Boron	11.0	Platina	194.8
Bromine	79.96	Potassium	39.15
Cadmium	112.4	Rubidium	85.5
Caesium	132.9	Selenium	79.2
Calcium	40.1	Silicon	28.4
Cerium	140.25	Silver	107.93
Chlorine	35.45	Sodium	23.05
Chromium	52.1	Strontium	87.6
Cobalt	59	Sulphur	32.06
Copper	63.6	Thallium	204.1
Fluorine	19	Thorium	232.5
Glucinum	9.1	Tin	119
Gold	197.2	Titanium	48.1
Iodine	126.97	Tungsten	184
Iron	55.9	Uranium	238.5
Lead	206.9	Vanadium	51.2
Lithium	7.03	Zinc	65.4
Magnesium	24.36	Zirconium	90.6
Manganese	55		

~~Have Legal Dept write Ottawa about laws on mineral rights patented since 97 M~~

Energetic Decomposition point of Sulphates

$FeSO_4$	480 C
$Fe_2O_3(SO_3)_3$	560
$PbSO_4$	905
$Al_2O_3(SO_3)_3$	639
$MgSO_4$	972
$CaSO_4$	1200 at arb

Solubility of SO_2 gas

at 20 C	Water dis 8.6 % by vol
30	7.4
40	6.1
50	4.9
60	3.7
100	0.1

~~See if Chandler has lost legal Dept go ahead on Cincinnati Explor Co~~

If a silicate contains K like Glass the K cant change no Spectroscope but if gypsum added the Lime combines with the Silica + the SO_4 to the K. + you get the K spectrum

Why Cant Gypsum + salt be added to the O of ores + fuses forming Ca Silicate + sulphate Soda of gas pre HCl, try

Make 2.5 gal 30% 25 oz

Try a solution of Ammonia salts to decompose MnO2 sal to increase solubility or increase tailings

Fred

Fuse 25 grms Lep
12 " platin P
12 " Salt
12 " Lime,

Ditto doubly
" Iodad
Try Lep 1st to see if fuses
goes

Also 25 Lep
25 Salt
25 Lime
If fuses OK – Try doubling
Iodad

Dunwoddie to varnish
blanks with Blanc
fix to bring out
black blank spaces

Order 2 Direct Vision
Spectroscopes like
mine, if not have send
to England –

25 Lep
37 Platinum
37 Salt

25 Lep
37 Quin
25 Salt
12 Lime To Stay
water long off –

	1/2 Tons	$15.00 per ton	Labor	$15.00 per day	Coal	Minerals	Crusher	Total	Costs	500 lb Cyanide	500 lb Cyanide 2nd N. Agency
3	9	135	500	135	36	50	135	791	1,00	15	
4	7	105	300	105	34	50	140	734	917	20	
5	5.3	79.5	290	195	32	50	132.5	663.5	63	25	
6	4.8	72	287	72	31	50	144	656	82	30	
7	4	60	265	60	30	50	144	629	788	35	
8	3.3	49.5	285	49.5	28	50	[illegible]	600	75	42	
9	3	45	283	45	28	50	150	601	75	50	

Thank Labor can be got to 100. daily on 4/10 ore

	Hours per week
Crusher 3 days 1 man	30
Heating Cyanide + Dumping	55
Ball Mills " "	55
Furnacing + Melting	55
Dumping Slags + Cupelling	55
Filler pressing	55
Evaporator	55
Chemist	55
Cancharging + Evaporating	55
Gent Laborers	110
Pipe fitter	55
Engineer	72
Fireman	72
Night man	84
Dept of mines	55
3 men off-mine	165
2 Crushing	110

About $500 week

Get copies of all mineral Reports of Canada for 25 years back

KS passed into NaOH containing ZnO precips at least if Cadmium it redissolves? Lelande

Test all the Grand Lithium Kung Called for Lithia.

~~Have only~~ Fred will make another crucible + Dec or 2 days swap down solution and See what salts Crystalize out - also dry out by electrical (M) & recrystalize & alance

Get a list of just what Machinery we have suitable for Lithia plant,

Mend ourself find all the Mica Mines in N Jersey from Chas Lake Reports + part slips in

Take a crucible with 20% graphite + Crystalize the hydrate + using a nickel anode Charge it to see if get CuO_2 hydroxide thus discharge with Zinc

Make Crystalized Cobalt hydroxide if possible also of course Ni hydrox Crystalized

Ch.1

Change A4 to 120 amp
slowly then see if it lasts
Change by time —
Iron pump OX dissolved in
Electrolyte overnight

Mica Mine 3 Miles North of
Hewardville on west bank of
Merrifs Creek, Harmony
Township Warren Co

Also on Scotts Mtn
1 mile North of Broadway
on SE side of the ridge
near the road to Springville

Meeke Rome black hydrate
wash & dry well + press
disk — also mixed with
glass + ignite yellow
for Vulcanite also in pocket
not Corrugated —

3%	Li_2O	Equal to	96 lbs dry	LiOH
4%	"	"	128	"
5%			160	"
6%			192	"
7%			224	"
8%			256	"
9%			288	"

2000 cells 90 gms each 400 lbs dry
LiOH required daily 24 days month
9600 lbs dry per month.

3%	ore	daily -	4.16	Tons ore required
4%	"	"	3.1	"
5	"	"	2.5	"
6	"	abt	2	"
7	"		1.78	"
8	"		1.56	"
9	"		1.38	"

Try a CuO disc with Reg 20%
Electrolyte in proportion to the
disc weight & add same proportion
LiOH as ore disc in Battery —

If good try the Crystalized Hydrate, with Litt'le Alcohol.

Dilute Try Prussin alone without. Ignited using 24 or less of Oxidizer the same way — to see goes way up.

See how much Citric Lime is taken up by Calc to form a soluble Oxychloride —

If there is Village between Metallic Fe in Kettle & the Nickel plating Then plate some steel strip with mud & wash in H_2 + try —

PHOSPHATES

	Cold	Hot	Alcohol	Alk.	Acid	Water	
$AlPO_3$	insol	insol	Sol	Sol	Sol	Sol	amorphous
$Ba_3(PO_4)_2$	insol		Sol	Sol	Sol	Sol	
$Ba_2P_2O_7$ Prem	0.01		insol	insol	Sol	Sol	
$Ca_3(PO_4)_2 4H_2O$	0.003	Stcomp					
$Ca_2P_2O_7 4H_2O$ prem	S Sol		Sol				
$HgPO_4 4 aq$	insol	0.067					
$Fe_4(P_2O_7)_3 3 aq$ P_2O_5	insol				Sol		
$Fe_3(PO_4)_2 8 aq$	insol					Sol	
$Pb_3(PO_4)_2$	0.00001	insol			Sol	Sol	
$Li_3PO_4 H_2O$	0.014						
$Mg_3(PO_4)_2 4H_2O$	0.0205				Sol		
$Mg_2P_2O_7$ prec	insol	insol	insol			Sol	
$Mn_2P_2O_7$	insol				Sol		
" " 3 aq	insol						

	CaCl	Hcl	Phosphates alcohol	alkali	acid	NH_4OCl
K_3PO_4 ortho	S sol	sol	insol			
$K_4P_2O_7$ 3 aq Pyro	Sol	V sol	insol			
Na_3PO_4 12 aq	28.3	V sol	—			
$Na_4P_4O_{12}$ Meta	insol	insol	—	sol	sol	
$Na_4P_2O_7$ 10 aq H_2O	5.4	93	insol			
$SrHPO_4$	insol	—	sol			sol
$Zn_3(PO_4)_2$	insol					
$Zn_2P_2O_7$ pyro	insol	—	sol			sol
			Fluorides			
AlF_6	sol	sol	—			
AlF_6 7 aq	insol	S sol				
NH_4F	V sol	Decomp	insol			
BaF_2	0.163	S sol			sol	
CaF_2	0.037				insol	

Fluoride	Cold	Hot	Alcohol	Cold	Acids	Alkali Salts
$IrCl_3$ HgF_3	S Sol	Sol	insol		sol	
HgF_2 4 aq	S Sol	Sol	insol			
one HgF_2 4 aq	S Sol	—	insol		sol	
PbF_2	0.064				HNO_3	
SnF_2	S Sol				HF	
MgF_2	0.007	insol	insol	insol	HNO_3	
MnF_2		Dec	insol		sol	
MnF_2 6 aq	insol		insol		Sol	
KF	V Sol	V Sol			HF	
KF 2 aq	V Sol	V Sol	insol		"	
NaF	V Sol	V Sol	—		Hot insol	
NaF 2 aq	40.012		S Sol		Sol	
SrF_2	S Sol	S Sol	insol		sol	
ZnF_2	S Sol	Sol	"			
" 4 aq	"	"				

NaCl + Magnesium Sulphate decompose each other dry or in solution, if chilled down to —4° Cent Na_2SO_4 crystallizes out. The mother liquor can be boiled down to $MgCl_2$

$MgCl_2$ is decomposed on heating although incompletely into MgO + HCl —

Dilute solns favour as detectably poised reactions. On account of small solubility of CaO any solution may be considered very dilute,

If MgCl is used this is different and it should be added in very slight amounts, otherwise to reversible reaction will stop its action, as long as

The products of the reaction are removed from the cell by becoming recirculated the electrolyte will contain

Lyndon Hero & Cell made up non oxidizable with Everything implanted including grids Connections To poles & test for building charge

Dolly [illegible] Lyon

[illegible]

[illegible]

[illegible]

Freitell punch for Li Asbestos
Rescu

Work on

Etheric Experiments recorded and
Chalk phone perfected Chalk Audion
Speaking Section
Chemical recording paper
Clay emell
Pallech from Felspar
9th Symphony
Lithium Lederlay
Building 101
Soundings by Galatt depth bomb
Sectionism Lecture
Auto firing War vessel guns
Camera lounge (vocal)
Dry Alkalum Cells -

see if 9 perforated Blank & Varnishing with Condensed

Lelande Electrolyte
put in 10% of Every
Compatible Colloid both
with Soda 20% & KOH
20% — to increase solubility
of Lime Ox

Meadowcroft get
½ doz bbls Lead glass
Sewer pipe & tube

Try Glass with lime in
presence of def Chlorap & alk
organic matter sugar,
to increase solubility of the
lime —

10 Machine Cycle —
Opr works 45 machines

Loading 30 sec
Bleach 35 sec
air Cool. 240
305 seconds —
589 in 5 hours max.

Lelande Chemical —
Rosin Soap —
Silicate Soda

Lithia — at Boiling Temp
Magnesium hydrox 21 pts dissolved
in 100 pts water — 1 to 4

Sol Chl Ca boiled with slaked lime dissolved [illegible] [illegible] [illegible] possible [illegible] [illegible] of [illegible] [illegible] [illegible] [illegible] [illegible] other chloride [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] Ca [illegible],

---

Work up a device whereby the ore is in beaker + the water is pumped or filtered + run thru the lime + filtered back so lime never gets mixed with the ore.

Try 10 gms lepid + lime water Then after 1/2 hour filter off pass the water thru lime in filter paper back to beaker again

Fred Att Rig up a stirrer for [illegible] Expmts on other hot plate ([illegible]) —
May have to put some coarse sand in —

Try an [illegible] - for 2 hours boil Lime + Salt —

Filter then dry somewhat + grind in [illegible] gently to rub off the precipitate adhering + put it back with fresh water + salt 2½ g. for another period say 3 hours + do this till [illegible] no more comes out,

Maybe

[illegible] [illegible] 250 cc Water saturated with SO_2 put on hot plate [illegible] [illegible] 500 [illegible] salt

Selenite — Franklinite —
see if Manganate or NaOH
or KOH form double salt
in Selenite Lorraine more
Zone

~~Try 10 analog in rotating device
10 salt 10 lime~~

~~ditto 10 analog 10 CaCl 10 lime~~

~~" 10 analog 10 Cal 5 NaOH~~

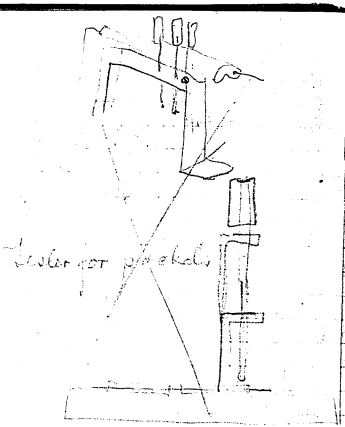
~~" 10 analog 10 CaCl 10 MgCl~~

~~10 " 10 Soda alum~~

~~10 " 15 Bi Sul Soda~~

Try Chalk or dependable
with CaCl + also pass CO_2
from Recarb which is
family set —
Caption Modern work
in water containing CO_2

Madsen
Why Silicate Soda +
Silicate Lime in regard
precipitation NaOH to
make a glass, precipitate
to stop spending



Try making a Disc blank
by welding the [illegible]
in well flow-[illegible]
remove [illegible] slowly [illegible]

Soluble Ferric Oxide
a Basic salt perfectly
sol water.
5 to 7 Molecules ferric ox
dissolve in water & chloride
to clear sol. needing to
heated or diluted with
aq. without decomposing
10 Molecules Fe_2O_3 to 1 Fe_2Cl_6
are perfectly sol after
[illegible] solution

Roasting iron in presence
with Kacl [illegible]

Perhaps [illegible] Fe_2O_3
with Salt get a
[illegible]

After powder is ground & sieved to sized put in a mixer & add some Clean Linseed oil to cover the Rosin & make a powder flow —

According to Sourset
Experiments to put powder in uneven size & hole & then try to produce a flow by adding something —

Sulphate Mg decomposes NaCl giving HCl — which Mg is in Native this secretion is used 2 of MgSO4 to 1 NaCl

Sulphate forms first heated in a porcelain glass with HCl & some NaCl part of Mg is volatilized as $MgCl_2$ & add common as follows

Evaporate 1000 cc of the Ambling Alum Salts recovered from residue

Leach 10 ambling flocks with 10 grams H_2SO_4 Conc then add another 10 grams Ambling Lees put with decomposes more Can be seen by Check method —

[illegible] 10 [illegible] with 20 [illegible] Sulphate

[illegible] (Mg) has improved drying preparation to Linseed [illegible]

Rosin forming powder proved by 5% Caustic Lime [illegible] harder

(21)

Immediately [illegible] of
hole in blank put in
cup full same size as
hole on top —

Try 10 ambling &
[illegible] &
2 Fermon Sulphate
& few drops H 2.50 of

Try Ambling 10 &
Cold Sol 7 grms
Sulphate Alumina

Dalley's Blank

Clay	1400	
Linseed	700	
Resin	700	
Black	160	
PbO	70	$ 229.80

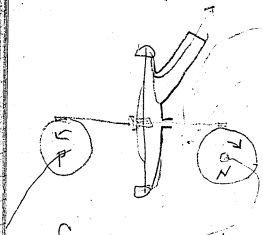
Wt of about per blank 500 grms

1 Hour in Kilper
5 " Oxydizing
2 " Ball Mill —
Puts thru 40 mesh —

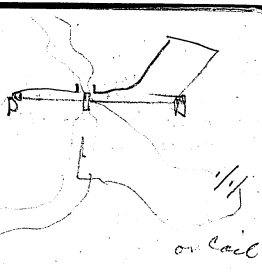
20 drops 1 ft 2 drops
2 ft —

Klein Chocolate Co
Elizabethtown Pa
Almond Chocolate

Find a number of cheap doublesalts with graded strength of acidity for deoxidizing –

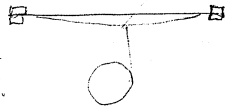


Condenser should be used to stop condensing currents thus conserving precision –



Passing 20% KOH thru a Capillary platinum tube decomposed to Graphite are great precautions hence Platinoid & measuring frothing by the Voltage of Electrolyte to Reqd be observed

with Chalk plate
use same sign idea as
disc but stiffened
much



Make Rockwork
drum for Elec Graf —

Select best Emg Accumulator,
+ Run Curve of
deformed pressure
forming them —

Also mix various
dopes in the making

such as clay, Viscose,
alkalene shellac,
alkalum Condensite
Resin, alkalens Cellulose
sugar etc in various
proportions —

Have Bayer Hardy
test limits of
Audibility with
Reg Rec & Emg —

Rig up Navy Wireless
set with antenna
on top of House &
test Emg + Rec
with Audion

Misc —

Try Cumpmerone & Shaw oil, linseed also with [illegible] of waxes —

Try Acid Sodium Sulfate

2 mols of NaCl 117 pts
1 " H_2SO_4 98 pts

it may be added in at [illegible]
[illegible] to require
neutralized [illegible] the
reaction [illegible] material
will [illegible] sulphate
[illegible] remaining
sol.

Lalande — find some solid substance not sol in NaOH, that will combine with the ZnO & form a solid to remove ZnO from the Zincate perhaps Caustic Lime, Sr or Ba may do it. Ca is prbly best on account slight solubility —

I have some saturated Zincate. Try $Ca(OH)_2$ using CuO & new Zinc in it, if get nothing add Caustic Lime & other things this is fine way to find a substance

Mica –
try Ca Sulphide –

Storage Coat,
Mix 5 10 15 20

30 & 50% Ba Sulphate
with 7% thoroughly
Make pockets Spray
ditto Range –
Try cold test also

Miller try 7.5 Sp.
Quarry – equite, reduce
H, & test

Also take Reg 7%
pockets & dip in
Concentrated Sol &
precip BaSO4 in pores
of Cc –

D Bat – 60% Reg 7%
40% of high temp mix
Metallic looking not
self healed mixture
ditto Nickel instead
iron, ditto Aluminum
flour Metallic –

DB. once used 7.5. Thinner
goes – see if can make it
Chemically instead of
Electrolytically –
"ous"
There owth & Lead be
used in Lubes –

Also use powder 7.5
& Chromate & by
Current in Tubes. ?
do it thoroughly

Make some Viscose from Lithia hydroxide in place of NaOH, use absorbant Cotton —

Fill a Reg A 4 Cell clear full of slaked lime, mix, and using 18% NaOH —
Test time " also
Plaster Paris — 1st trying
New plaster Paris acts in
NaOH 18% + LiOH,

A compound MgO, Fe_2O_3 black shiny Octahedrial Crystals Easily formed passing HCl gas over a mixture of MgO + ferric ox Heated.. This may be idea for reduction by H + also shrinkage for 6 Part LiOH make some of many other Compounds of ferric ox & other Chromates known Bernheim — 1888, & Rosseau 1891 found

Try Iron alum to decompose Ferricyanide -

A double salt of NiK_2F_3 is obtained by heating $NiCl_2$ with KHF_2 in platinum crucible
fine green plates,
Reduce liquor in H to make Ni flake for plating — The Carpet Lining [illegible] in air

Lott making

Try accelerator would flow at 275 @ 300 -

for Cleaning cylinder scum dip silk cloth in Collodion & dry — or nitrocellulose or Linseed oil, or Balata, or gelatine —

In Emf after washing & smoothing trick & get [illegible],
Oil the cylinder with soap & draw out

Arsenate the surfaces of copper & brass & platinum stick that already stick to steel —

Emg — try KOH in different solvents glycerine & others. Begin 10P liquids first.

Also 15% KOH dissolved in nearly Conc Chloride K. & most sol K salts. try LiOH also mixes of KOH, LiOH NaOH. Sodium Nitrate

see four chucks holders and platinum 4/21

grind up discard chucks from 20 mesh & remount & see if OK — quote Drumming. Ball mill with 1/8 & 1/2"

Look up old notebooks for all notes on Chuck photo & copy

Make Mond reactor with spring coil for driving chuck plus — details Connect to 250 clock motor.

Make 4" chuck plus with stroboscope center for Pt

Ultra violet beam + vibrating reflector + 50000 sec oscillation for phone or Radium ray or X ray that could be rolled to strike vac tube grids

Retry Kr and Etherio + use phone + check phone,

Try Boric acid or Borax in Cu O cell

also Mercuric

Dr of Wash Wlg Chicago 1/16 Christ several used as a Condenser although [illegible]

See tube also X ray tube check phone

also

Eng.

Try Lenses also -

Eng

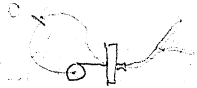
Radium also

X Ray

was not the

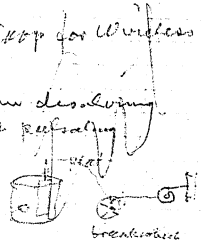
Eng

+ all Chemists Friends



adjustable Loop for Winders

A crystal in dissolving
should give pulsating
Energy



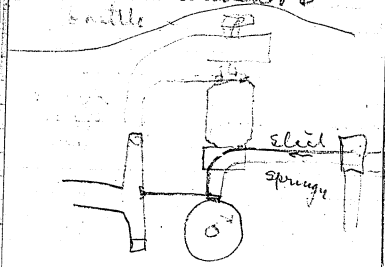
to get quick results put
fall the K Crystal balls
in at once [illegible]
Water to stir
[illegible]
warm water with
Saturated Soln
Crystallizing –
drills showing [illegible]
& dissolving [illegible]
& Wedges by words

See if Solid Carbonate Soda
& Solid Caustic Lime not
imported with in rolls entirely
be reduced to Caustic. If
Carb Soda has no water use
outside water or steam –
this will do away with
crystallizing with only
10% solid –

Work up the Spitz Kaus
on large scale –

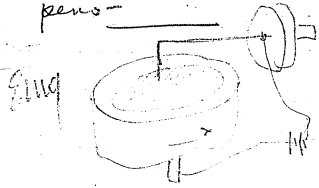
also 6 beakers of
Arabic 10 & transfer
1 pot full Hour see of
sk bicarb Soda
Amm – & 6 2044 also
Use Lime – Spoon
& keep to be never

I quite yellow white down of the side of pod such as
& Cuttle & French use
[illegible] 1/8 [illegible] see of leg
Medium [illegible] of
bottle

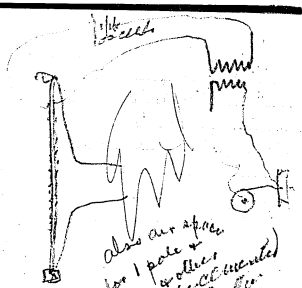


Longitudinal waves
of long waves the strings
[illegible] & [illegible]
friction with small [illegible]

see what can be done
with a Zinc as a transmitter
disturbing the polarization
Current, standing
also runner using
Bell & Zinc for [illegible]
also different solutions
also Al & Sandalwood
pens —

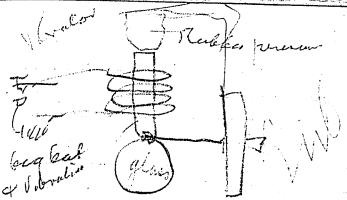


Zinc [illegible] Cup rotated

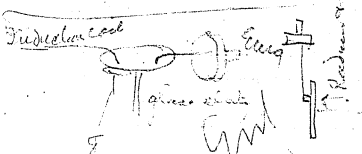


Rubber disc, fine foil on
each side

Vibration varies Electro
metric force change



def metals, Crystals
Etc



Change grain & reason
reading EMF & repression
Mica-Etc also Ultra
Violet & Red Light &
X ray Radium speaks
with shutter

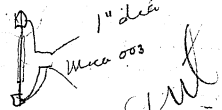
Design Tube Aluminum Cell
also, hand Lamp Exciting
with Lamp Charger —
for trade !

cell with say 1½" dia
1/8" dia
.005 thick

Evaporation
Holder

Rotoscope

atom drawn thru
die 18 K into
phenol thalein —
in air

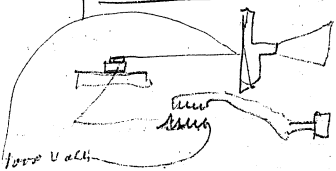


Spark, showing of varia
by [illegible]
disturb the charge
+ amplify

Lelande, start Experiments
with other quad ~~[illegible]~~
other increase greatly
but separately the usual
impurities to see
just what impurities
hurt developing of
Zinc

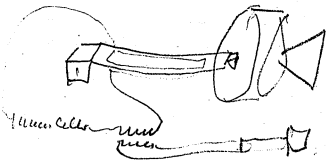
helanda makes steels on several makes of Common Zinc & correct its defects by adding something to the Electrolyte.

Tellurium point & say album film or celluloid for recording wireless at great speeds using Audion amplifier

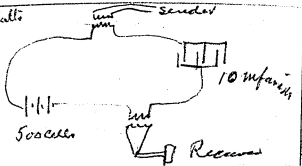


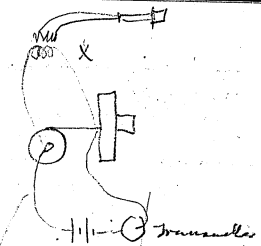
Mica between diaphm Electrode & bottom Elec sliding

due to vibration. Stresses mica & ~~wood~~ at different parts & cause Electrofication Rush



Vibrate & Change Electrification





When wave comes no self induction to Chalk Current opens when O on pen, lets Current then to X -

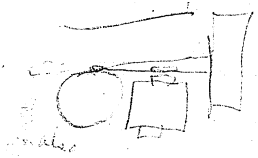
---

for screens use 1/32 mesh or less silk gauze meshes stretched on frames, the powder the substance of screen slightly larger than 1/32 + put on screen + shaded with Vaseline

Crystal [illegible] Z Electroscope - End & side to take advantage of dropping of then legs weak, head X, Fig + XYZ rays vibrated on + three Crystal - Chalk placed detect)

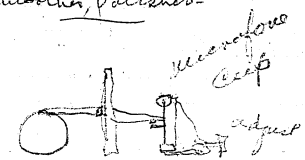
Definitely determine with standard Chalk stable Conditions the best pen mixture to use, want it very hard so can use very narrow pen or ball -

Also make Exact
measurements of Resis
Dulwyln Currents
Voltages, amp. also
Currents by notation
These Exact measurements
are necessarily of no
a Movement



Make friction magnetically

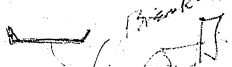
See of Can turn, chalks
smoother, polished-



friction connection

Dully - tiny wooden -
~~Stone~~ paper wax, hard
Tallow, Candlehorn -
with Rosin - wood oil
Rape seed, Benzene

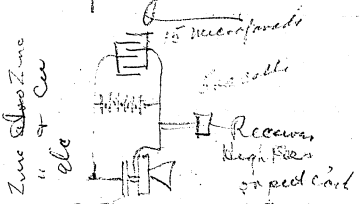
Try say an acid salt in Cells then wet a plate with an alkali or other salt & dep in solution, Recount on Elec precipitates.

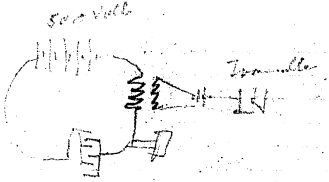


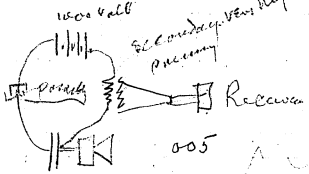
dish to precipitate in other not on metal of dish

Using the Wood fibre & Rosin in sufficient amount to flow well put man on No 30 Cabinet again –

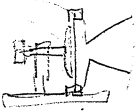
See what is being done on regenerating old Cells, if nothing start it up again –

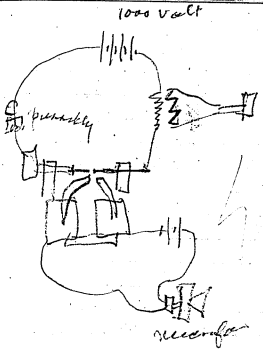




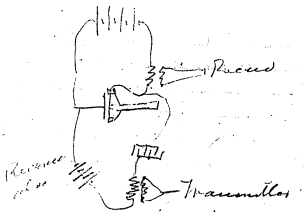


or





Try Oxidizing Rosin
by H_2SO_4 & $KClO_3$ chromic
Alla — cells.
Answer



Possibly Dra of mica
Hard Rubber alum
glass celluloid & other
things - & possibly
Crystals - also. Those
Crystals that gave
Voltage by pressure &
also Zinc Sulphide discs
(Ie) Electron Calamus -

Cut from Crystals Slo
discs & put of metals
on Each side & 1 ap
to get Current until
good one found - Fluorite
agate, Electron Calamus

Williams

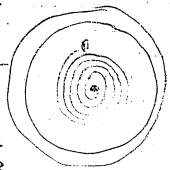
Make some Sensitive
Calcium with
some impurities & get
X ray actful & find
if impurities increase
sensitiveness / small
fusions in Crucible
in presence of
impurities -

If Organolacous smell
is a ray -

Run down more bucks on paper over tin. Think I have an approach made —

Look up & collect the X+1/2 approaches John Ott made for me —

Je - Bottom keeps Res thins down, Various K avenues in 100 deg C 5.9 : 1

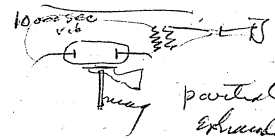


Selenium Very [illegible] Tellurium [illegible]

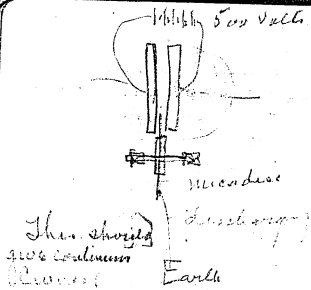
Hard Rubber dia or sulphur free film of a high res conduction, 0.001 thick or less, high voltage for

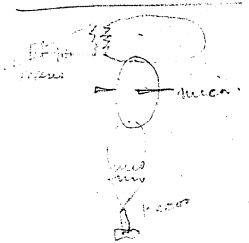
Varying Res by heat & cold due to [illegible] of dopes ~~[illegible]~~ possibly [illegible] or, Dye medium Stellar Res film must be very thin to get heat & cold initially possibly [illegible] & [illegible] total [illegible] Valuta, = Rh phos, Tellurium

Try Hg in CuO plate say oxide, so more solved for oxide, so can impregnate plate think voltage be better



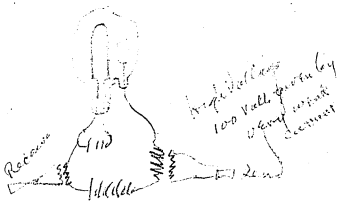
(1:1)

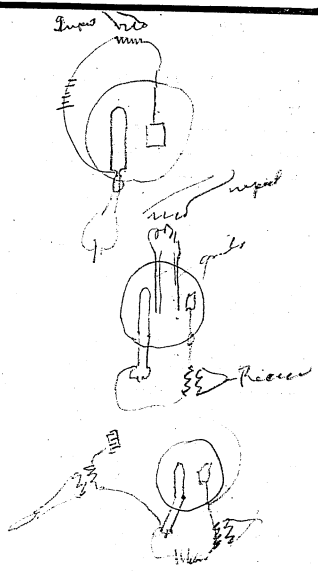




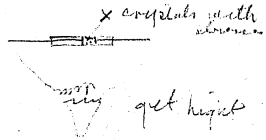
Finely divided acid precipitates like WO_3 should be made as Chalks & Lead with acid Electrolytes – with different specs –

It may be that ~~the~~ absorption of H + OH in the palladium is an unprofitable process in Chalk & Lead





Think Coherers work by static -



Use lamp to see how Current acts in Chalk telephone under various conditions

Watching Max conductance for chemical agents automatically

get Vac tube that will
Continuous Voltage discharges &
discharges at 10 to 15000
second. Think Cyril Elec
have some, find out
what Pattron is.

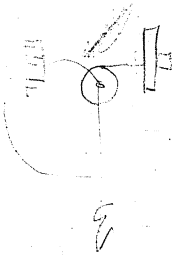
Rec of charged Rubber
on glass rod held near
Aredron tube affects
it & how much a
distance away

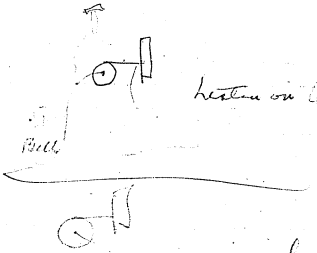
test current between
Aredon tube wire &
plate without tube
in circuit — & all
kinds others —

Chalks in series
connected all to
1 dynamo — dittos
wireless —

Try many cells
& make chalk stay
dynamo & test in
Ckt a Coil to see
effects resistance
when constant
current flowing
Try OX plate cells &

Try [illegible] in iron screws
from Mint for thin plates
also Cakes like Chocolate
so can be broken in
sections, put in pockets
to get rid of crushing Wrapping
also Cakes like chocolate
+ reinforced + reduced to
Fe by compressing iron wire
then cut + used in plates



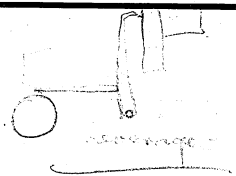


Letter on leather

Magnesia cylinder
Oxidized on surface by
flame — then compound
with Mercury very light

Dills Aluminum, Zinc Cadmium
Tin + other oxydable
metals — also

Platinum Vermilion coat
with Various Enamels
Etc — film by Electrolysis
Lead Cylinder + Sponge Pt —



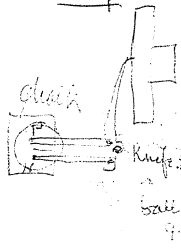
Varnish japan paper with Condensite Varnish Dry & Condense to Rubber Strips or over then press in shields for Dirigibles, Cured pulley or not Cured any feather

See of 6/4 well hardened Para Cumarone

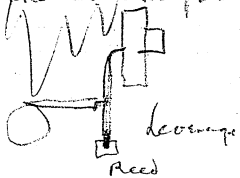
See what Linoleate of Lead is like

Make mix of acetate Magnesium & acetate Iron 60 of both, ignite & reduce in H for bulling

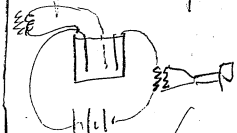
~~Dip in screen~~
Magnesium Cylinder for Elec Cord with Oxide electrolyte in KOH, — Hydroxide, Dry also Oxide by heating



Make a more sensitive
Diaphragm to little cup of
the Bell Microphone -
probably shrinked disc
So rubber gasket not
necessary as I doubt
slant Rubber gasket on
use Rubber of a solution
not affecting rubber
gasket could be found

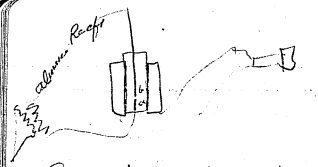


If Now theory might then

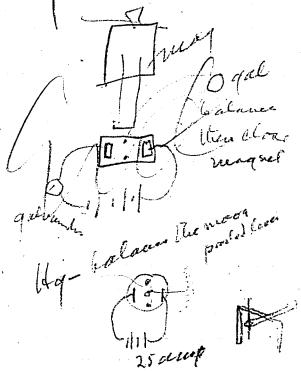


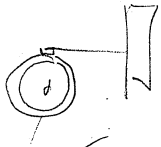
This cell with electrolyte
slight or strong showed
absorption. May be
necessary to have any
high Res electrolyte -
so can use 100 cells

The grid probably should
be a substance quite def
from P, so most of current
go on P + not on grid
for instance grid of
aluminum + P of X4Z


aluminum Roof

Different iron at a, b, thus effects coil – use permanent mag –

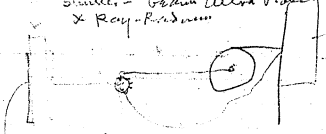

mag
equal balance
thin clear magnet
galvanometer
Hg – balance the mass pointed down
25 amp



Mag 0001 thick shellacked on the cylinder

Put Cathers of high dielectric Capacity but Conducting. Thus allowing Current high V thru the cathers – now insert a rectifier in ~~series~~ this allows 1 way Electricity – it cathers

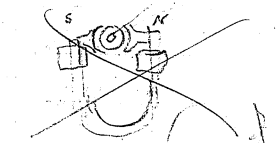
Shutter – Vacuum Ultra Violet
X Ray – Radium



Sulphate

break wheel

also an Efflorescing Cryst



Try sides of holder of different made of different Metals & use same solution –

also try Reg Sodium with various different Salt Solutions –

Want to get a gradefy Chalk, on solution

Make Chalk absorbed fused Silicate K or Na various proportions –

Make Silicate Na with powders to make Cylinders for Energy

Light

Curved Surface by reflection

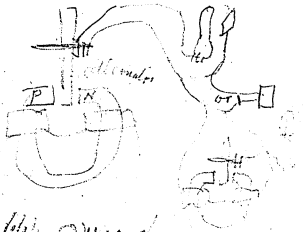
Tellurium etc

Diffract very light

Lens

micro

Rotated Nicol Prism



1/4/4 Microfon.

Magnetic amplifier –
of Crystal detector

Double tube

Using Tin foil detector by
quelled the thermionic
Run down connected trouble
when passing down
tin – Sandaway
Connecting from the

Urania John Ott make me
a cabinet with several
metals on to be covered
with paper also a
new connected to
Dea to detect to
any difference of frequency

Probable Sulphur
not crystalline fall gives
ray better than crystalline
tin the frequency
frequency frequency

Sulphur may be same
thing – also crystalline
leaves gives a ray

Possible detector
by Eng or Thermo or
gal or phone on
Thermo, amplifier to
shutter

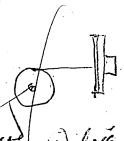
(134)

Try chilled Zinc + chilled Cu plate black vapor on Photo plate, Zinc + for Red long time see if get photo -

Use Audion + try effect of rays from diff substances striking the air space, also grids with 256 see shutter to see if Electrons are affected.

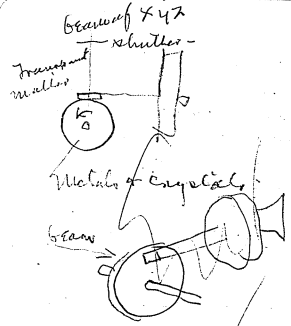
Use E effect + see if current is affected by rays. Etc also use magnet

A4 - pack it full of Carb magnet about 40 mesh + dry + deshy + see how it holds charge + also Bismuth if it vibrates up good.



highly polished Coated distilled Varnish thin, some pressure on pen see if Current + X-Ray effects it

Patent Pending charge breaking of these Vars

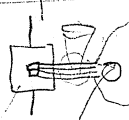


Daily Stirring Potash & Rubber mixed Linseed oil

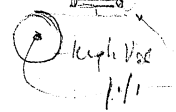
Daily use of Scrap Rubber as oil in Hot Linseed also Aniline —

Rubbed Tin —

Uranium must give out a Ray —



Thermos Glass exploded Worked by Voices



both contact varied

Aluminum plate 1 X 2
put in sickle[illegible] sol a.
formed for 1 min both sides.
do same — Then —
wash rest a day then
[illegible]

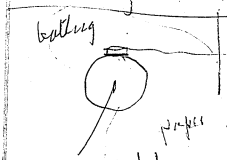
then plate over Copper
or Ni over grade.
wash dry — here we
will prob have a
[illegible]
[illegible]

Put best of all such [illegible]
polish [illegible]
and a melted buffing
between 2 plates plate.
melted wax & Copper plate
see what is given off
& or what use plate &
some other metal ideas

Induction Coils -
thermo - try Mercury
+ many cells so get
Current flow

Ethers

Use the big break wheel the Coarse wire spool, The dark box & Zinc rod & also the foil on glass rod get sparks in old way ~~[illegible]~~ with hoop adjustable around dark box use iron Zinc & after get spark put in stone if get nothing use EMG if nothing - put in rectifier A EMG - use stone If Cannot get anything & yet get spark then multiply till find out what it is & also strength there is, also use electrom

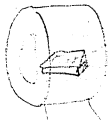


Make flakes Shellac Sle & tetrachloromercurithiolane & also Dinitrobenzol — Naphthalin so if sequence time to crystallize out & see if they comes from them —

Also Melted Anhydrous Salts powder out to form flakes

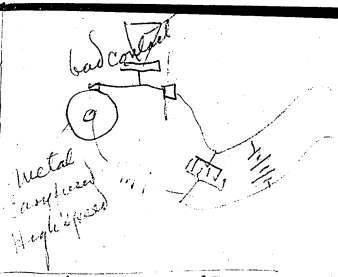
$AgNO_3$	MP 217 c
$HgBr_2$	242
$LiNO_3$	267
$HgCl_2$	293
SbF_3	292
$NaClO_3$	302
$NaNO_3$	316
KNO_3	339.

Maybe clock given by iron which magnetized well given off x ray etc



xyz Rico

powerful electromagnetic currents



Pack CuO plates in Hamilton or magnetite

platten Gegenstrom 1/32
~~opp Metall 1/16 opp Cu~~
between 2 platten
room in very dark
room – Spark Coil
Current there also
Strength Voltage see
Lilienwald

see if helix or Electrofelin
of a Capacitating tube Effect
the height —

one ft long wire wire in
helix one end fastened and
other end touching a wire
fine. Sends electricity etc
Listening audion —
also try other metals —
+ Materials —

Investigate rapid appearance
of heat at extreme end of
a bar of aluminum
when the other metal
end is [illegible]
or [illegible] —

Try Bone black cylinder
Emq —

Make Telephone Receiver with
pure annealed iron, see if
it works if not try ways of
making it work

Make Condenser Lake and
flakes old jewelry Lyman

get peculiar sis

Dinny take place Pupils
Coils —

Open up Wehr Condenser
see how its made —

Patent Arsenite Soda for stripping Ni from Copper -

Patent Etches

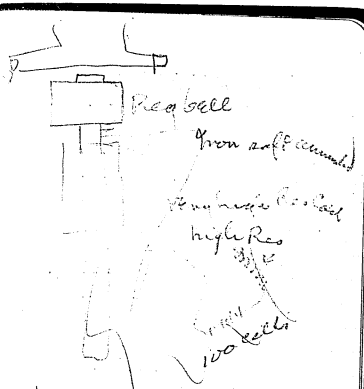
Dry Slaked lime exhausts [illegible] impure air and my electrical - Eng -

Cadmium Hydroxide - Nickel [illegible] Manganese & ous Oxides [illegible] Oxide.

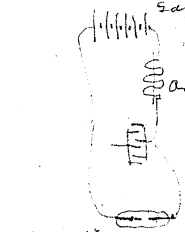
Bismuth hydrate -

Ignited Aluminum Oxide

~~[illegible]~~



to magnetize iron but [illegible] frequency Coil so high Res that 95% goes into Reg Coil - if this is OK it will provide field for Magnetic [illegible]



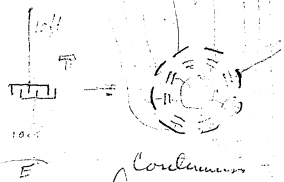
adjusting impedence -

Buy trial special book on Induced record act only sold to subscribers

Try Recipe Lead of Induced act boiled - + flock with clay chalk etc

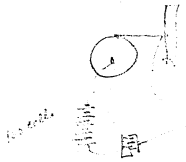
See Watts Dic. Inorganic acid
1 pt fumed acid 2 pts
Nitric Concd with
4 pts water heated
Quartz up, gives nitrous
gas & dried to tough
elastic resin —
gives other methods

Phosphorescing
Non Conducting Dielectric
between metal plates see
action of Light & Current
on electrodes



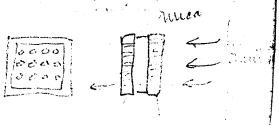
Condensers

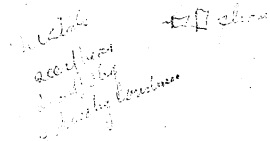
Wire at right angles to E & the
magnetic lines. Construct of 50 micro
farads — 40 cms × 40 cm Wire cut, lines
due to rotation of armature, plus condens



with this a magnetism is aware

a & c Vibrating close together
no non-electrolytic cond.
Electrolytic b is a plate grid
see if any amplification



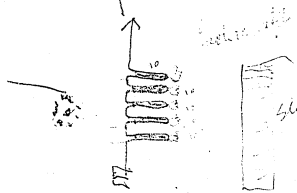


Phone = 6X6 Kinetoscope
Connected.

Make some tests on Emg
closed in with wet
sponge — running & still

Disc = to Cure Dull ones
Try more or less pressure
on Cinch than usual.

Try planting without
Parcelling —



Patent the Good-Lapid abt
Cuvette from question —
of Dallmeyer works patents that
[illegible]

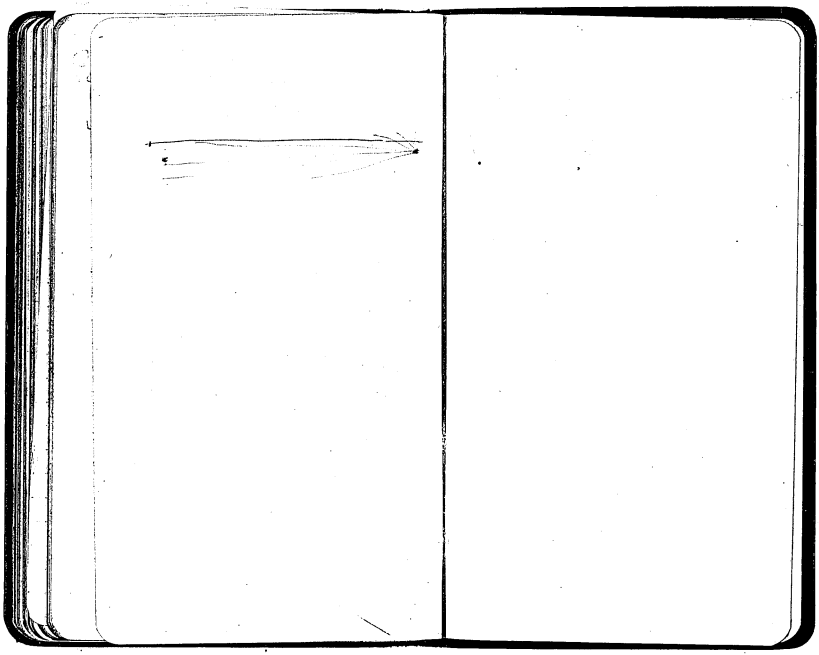
Harmony
Materials — Crystals
Cut in thin sheets that
pass when see if in phase
Phenomena — also Alternating
Currents —

Astronomical autoclave
Mix Chemicals and oil
& Resin together &
polymerize the resin
O.C. — Dallmeyer Lenses
with hands & other
optical parts

Make some Selenite by
Double Decomp from
Selenite & Sodium
Lime & Ba In die for EMG —

Rotating alternator
Anchor possibly from
Orient Magnetos of
soft iron by very small
magnet — Theory just
Experiments make adjp
may work with very
very weak lines —

find that book which describes
a magnetic anchor
—

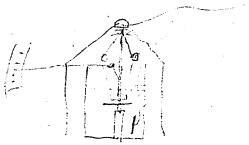


Notebook Series -- Pocket Notebooks
Notebook, PN-19-05-17

The dated entries in this pocket notebook are from May-September 1919. The book was used by Edison to record ideas about business matters, experiments to be tried, and other tasks to be performed. Some of the items have been crossed out. Many of the experimental entries relate to storage batteries, including notes on a self-starter battery for the Ford automobile and numerous chemical experiments. Also included are notes pertaining to the electromotograph (EMG) and chalk telephone, Lalande primary batteries, audions, disc records, and chemical paper. In addition, there are remarks on "a new cylinder process" and other entries that indicate Edison's continuing interest in improving the quality of his Blue Amberol cylinder records. Some entries are of a more speculative nature, such as an idea "for larger movie" involving four projectors focused on one large screen.

Among the business-related entries are detailed evaluations of several musicians who responded to Edison's advertisement for a pianist, including comments about their physical characteristics, ethnicity, and religion. There are also notes on plans to sell Edison Portland cement in South America, production estimates for disc phonograph cabinets, lists of inventions to be patented, and descriptions of properties near the Pennsylvania Railroad that might be suitable locations for a factory. Some entries refer to legal matters such as Edison's contracts for lithium property and a lawsuit involving John Ambrose Fleming's vacuum-tube thermionic valve. A draft telegram to industrialist Harvey Firestone discusses the upcoming camping trip in which Henry Ford and John Burroughs also participated. Some of the entries may have been made during the trip. Among the Edison employees mentioned in the book are Charles T. Dally, William W. Dinwiddie, Elmer E. Dougherty (the "works Chemist" hired in August 1919), Charles Edison, Stephen B. Mambert, John V. Miller, William J. O'Dair, Ludwig F. (Louis) Ott, and Gan C. Yee (whom Edison called "Chinaman"). The pages are unnumbered. Approximately 150 pages have been used.

Nov 17, 1919.



Drawings showing [illegible]
Electrolytic [illegible]
Viscosity [illegible]
[illegible]

~~Letter from [illegible] about the man~~
~~Chem for Coquimbo [illegible]~~
~~[illegible] balls [illegible]~~
~~[illegible] in [illegible]~~

~~Drawing of [illegible] on~~
~~the Copper Case by~~
~~using Alternate Nu~~
~~[illegible]~~

Ask Dallas ~~Dan~~ if the person was cold when he found the Green heating up in the Mould.

Look at Battery Balance Sheet.

Also phosphates, Dolomite

1/2 lb Na Arsenite to 4 gals Water -

put Current on 200

Milamp for 5 to 10 Minutes

If sol gets too old deposit green salt. could also be followed off - & new Na Arsenite added

Tell Kampfhoeft about old patent on Jul Franklin Institute Volume

Have Meadcraft look up Sciaphilia Amer about date of Electric,

1873 @ 5-6

See Wambaugh about
Drawing a BOOK that
will allow foreign
development.

Bag 3" dia 20" Long
will filter 1 Litre (1000cc)
per hour when filter
proper used
over a period of probably
10 hours or 1/2 litre per
hour 24 hours
Sure to probably work
over a period of 2 litres
hour for 24 hours
or 50 litres per bag per
24 hours - 55 filter paper

Old filter paper cloth 50cc
per 5 min. Wants new
cloth to dry well - clear
yellow sol

Door or a pickall
filter pieces anywhere
8X8 - or even 1 ft

250cc 5 mm 2 thickness
Lining hard to get used by
Cylinder Record Dept
for filtering solution
area 60 square inches
4cc per inch

300 but say 500 inches
wanted -

6 bags 3 inches Dia 4"
long

for blushing air on
Upside

New Cylinder per year
Take Dolly regular mix
& Squal it at 350 degrees
in Bre. to 3/16 coals of
same as Anderson faith
Plastic Cases Putfin another
Wood & Paper it at 350
Then varnish, oxfa. Co
Rubber Stamp & print

Legal Dept get me decision
on Marconi Flowing Valve
Case,

1 - Dimorphic - magnifying on place & discard
2 How would it do to Gillery a desk for distribute
Catalogues all workers Apps using our
Cals & Math up the Trade generally
3 Manbert fog out Eding money and spend
on bag returnable 7 / 3 4 or 5 times
Considering % recovery & returned
4 Sew a 1" band 1/3 up from bottom of
bag - also double band, triple band
& last by falling
5 JVM continue Exp Cobalt make
red by igniting Co Co Cals, Hot & Cold
leads,
6 Ask Monahan if his iron rod plungers
are not worn & if he got Crucibles for Cals to Com
7 JVM 90% Fe2O3 10% NiOH ignited & reduced
H make packets Ni metal well keep if
Considering which suffer from change
8 Lottage of Cupric oxycyl vs Sulfur
NaOH 20% also Manganate Potassium
9 - 2 Molecules Epoxy Tripx & 1 replaceable
Lead OK group glass softening -
Not oil & Lithium
10 - Harry have we [illegible] your darling again
get Mesa

11 = plate iron pockets every (km) Metal

12 Dally Point new records various Locos
pressure to get Lbs/in 100 400 500 600 700
lbs -

13 get flame compare photo record hoop
Dracus, Pythagoras etc wrapped /
play of

14 = unscrewed cylinders brass steel
this prevent full power, cold
air sucking steam makes part vacuum
don't make sense -

15 Howitt makes Lamp with
2 4cp fils in Carbon of
1 platinum spiral in middle

16 make a motor driving noise
like blowing steam Just
Can be run along the floor
away from phone to test
Volume - noise close to
Ear

17 = what is done with working
models

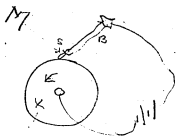
18 listen to cylinder records

19 - put Vent hole in Cylinders recorded
1/32 at end to get air
out.

20 Considerable wear tables
10 000 hours -

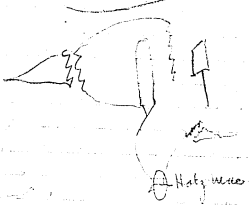
21 for cooling Cu discs
try phosphorous in olive
oil or other preferably
Volatile solvents, may want heat
also Electrically with Chloroform
Na hypophosphite Na -
Red phos also

Well Radium disabg an Electroscope
when immersed in an Electrolyte
in Than f the Collector Cell
Radium being immersed
in Electrolyte



Is which replaced B a heated
with Selenium & and resting on
which Cheek wat with
KOH & ill ray of light
of this ray strikes the Se
it makes point a Conductor
then Current will pass &
form Selenium Electrolyte
which immediately
decomposes leaves
mark —

an iron electrode Pt coated with
fine iron seemed to a plate ~~[illegible]~~
& with NaOH in KOH observe
Change of Voltage in the
dark or a ray of light
striking it — A fine series of
Experiments for all metals
Could be tried with light heat
X Radium Xyz to change
Eff especially of shutter
was used & phrase with
Ardron used to detect



Polyphon
Southwick Holly ave for Smiley

Joseph Schultz. No 1
701 South
11th St Newark
Cant remember Rush
Phonograph instrumental
so to play it —
plays it time very poorly
at 8 and — aft. 7 to 3
time Can improve

a little, Don't think
we can use him. Year big
nose, big Civil, think he
improve fairly work

Seymour Hurtt
254 W 52nd St

A Cougar, we have some
of his songs on phono
get. Cougar see his letter
plays by ear Think only
fairly well, improves
fairly and a little better
than No 1. Think he
might do if could get
better mic. Short neck
Large front teeth
Jew.

L Oth test for reg
Coffer stalling Dot
for Mitchel -

3rd Man short, bolder, your
Robert A Molino
1956 Crotona Parkway
N York.

Is somewhat raw he played
slowly by sight & gleam
Well, but couldnt play by
think Complicated music
He couldnt memorize
Kath M often learning it
twice, & didnt minutiate it
but what he did do was
Melodious Chords, he
played a vocalizing to sax
He Composed Twenty
Note work melodious
He might learn to be

useful to us if low
wages to start Think
he could Compose
his piano touch far
more melodious than
E # 1 & 2 ,

No 4 Andrew Schlesinger
540 W 125 St NY - 4th man
Remembered Kath M & improvised
only fairly well. His mind
Correspondent not very
Melodious. He failed to
played a simple wally
like No 3. Cant think
he will be no any good
Vocal - Tall Round head
Tell Weber face Semi Blind

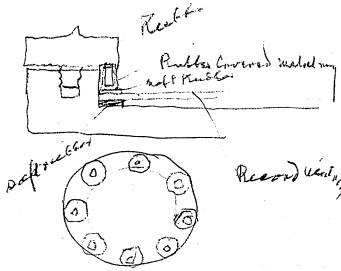
5th Man –

Scotch – short sunken
Eyes – Reads Music
perfect sight reading – one
can improvise on Cello
Cant remember a tune
tried Kalli M failed twice
Cant Compose –
If one good point good
player can sight read under
the ground floor –
Raymond A Dunn
940 Lafayette Ave
Brooklyn NY
Broad head –

6th Man
A H Hanoraff
1866 Cedar Ave NY

Plays pk by sight –
dont have perfect
interpretation of R Mounting
note but pretty good
Could not play K M
after listening never
Composed –
If wants to read is under
playing in OK & Ave.
OK
Tall man – near regular –
pin head

Charles Mountant How
about our chams
in Re Battery Lithia
Continuous Ed & Work
work – June 20 last
day



Plating Holder.

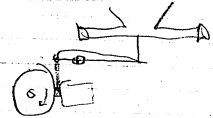
Home Sweet Home (Wood) [illegible]
by lamps - as playing Stream,
Bathroom [illegible]

Amount of Electrolyte per
bath per minute going to fether
unpleasant 190 cc
390 baths 74 Litres mean

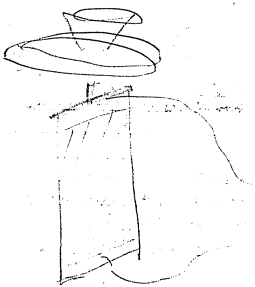
Kinchoto Lamp Easy mount
average 63 prints 24 hours
working 3 shifts - 44 prints
56 loads used
Schedule 18 men per room

Edison Valve Pat 307031
only application for Valve

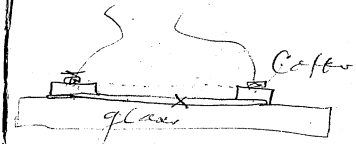
On hand 28th May
40 000 lbs Para
100 000 lbs Nelhraadamier
Sold 5400 lbs previously



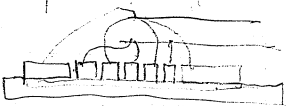
Emg Amplifier



Mica etc coated
Each area with metal
[illegible] them.
[illegible] Electrolyte of
[illegible] Conditions simplify



X is plated film of Solomon
+ Copper Eaten away
at X' decision,
[illegible] heat expands

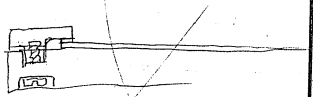


Multiple area of alus
acrid film Cu
removed by acid vents.

Flake plating

Ni Anodes around crack as now-cloth Drum covered with Copper selenium coated film, Washed out

Nickel Sol Coulaumy
Copper Sulphate Kept in Constant precipitation
Drums electrolyzed
Low Voltage deposits Copper - High Voltage deposit Ni then load for Copper + so on
Times we get film all Cu then film nearly all Nickel + some Cu + so on



See if Master is large enough to shorten it twice 1/16 each time making wkg mould 1/4" less dimensions of as Can use above. 1/8 on side

See if arsenic Antimonide Selenide, Antimonide, Sulfide times are useful. Can be worked by dipping + turned to use instead of graphite on Master does also the precipitates can be used,

Dia Mealer Malrex 10.370
" Wkg Mould 10 120
Smaller – 25.50

1/8 on side –

If Daly has trouble shaking off blocks to mould try facing Tap a bit with def metal, also dip in Sec Ar S etc

Velonde Cast common 7% Zinc with 3% of Al (or more) see if it would blend homogeneous 1/8% Na Metal –

See if Para or other organic acetate hasten Linseed oil thickening

Dimwiddie – Just some Combs effluts in Next batch Linseed oil blowed to reproduce the rubberfying phenomenon –

SB plungers may be worn in iron loading Machine

Q/VM make mix 80% 7a 20% Ni Sulfates roast reduce & Cast Ni will prevent shrinkage & act as Cords near end of dischg –

Also 75% Iron 25% Magnesia, roast & reduce this to prevent shrinkage

[25]

plate Se on point of a wire
+ see if more sensitive
than Selenium —

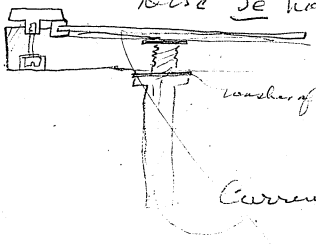
Krizman Jacobsen app
sinks 10 ft per second
independent of the depth

Hydrac acid from Petroleum
treated with fuming
Nitric acid gives a Resin
that's one 1" cube when
heated Experiments more
than Sulfuric acid (Tyndall)

Carbonize Nitric acid Crystals
dilute Sulphuric acid
Crystal for Microfone
granules, screen to size
rather organic sulfide. D Wright Melb

Make Lamp black buttons
1/4" to 3/8 dia by mixing
a very little binder of a
Carbonizable binder + then
Carbonize — Then for Mecro
as a whole + for buttons
on each side of diaphragm
holder also provide a screen
+use Lampblack granules
also Lampblk 100 mesh screen for M.
+ binder — to diminish Res

Base Se holder



Over Nickel plating 4 Volts
One Amp | 24 hours
.0035 to .004

Transfer to Copper bath
7½ Volts 12 amp 72 hours

Dress Metal finish wash
flash with Ni .0005
then transfer to iron
bath finish to
.007 - then Nickel
.0005 then Copper

Ord temp Solubility
$NiSO_4 + 7 aq$ 37.5 per 100
$FeSO_4$ " " 37.2 "
$CuSO_4 - 5 aq$ 37 "

Get Sales Calls Attorlan

Use metallic string on a
violin and a bow formed
of very fine wires —

Connect in Ceramic
using Channel Copper
records the tracks —

Patent Selenium - for
plating stripping by deposit, H by plating
another patent | Arsenic
by plating -

Patent Cathode deposing
in $NaOH$,

Patent Bowsprit Listener

Patent spring separation idea + open Hydraulic [illegible] schedule for discs -

Patent Mr plating of Conc. M Son + filtering system Cadmium with Mg Oxide -

~~[illegible]~~

Set 2 1/8" dia platinum wires very close together one adjusted by micro screw buffer sources, pass current ~~[illegible]~~ through till no current connect to electron 3 stage then let rays [illegible]

Close to points by a shutter to get around - also in chamber in which an fairly good vac. is maintained [illegible] also in presence of a very strong magnetic field while other rays are passing [illegible]

also measured in ~~electron~~ flow conducting liquids -

also in place points use dead flat discs 1/4" dia facing each other

Patent fuse machine [illegible] + other new 3 Bat things

[31]

plate film of Selenium
on a metal Cu or Ni

put in a good
Conducting Electrolyte
like KCl. insulate
the metal leaving only
the Se exposed make
it 1/4 dec.-
use anode -
then current passing
let Beam light
pass thru Electrolyte
& strike the Se.
use various thickness
of Se film -

Estimated 1 Meg Se Pt.
1" square is 15/millionths
of inch thick -

Sell Cement in Seattle
among Hom English
Exporters ~~Meerbagner~~
See Merchant -

Ask Hager for book
he recommended times in
Head 9 ~~book~~ -

Try def metals 5% soln of
sulphates with small
amounts of the metal to
make a less brittle Nickel
Zinc Copper, Cadmium
Mn, Mg, Na
also try some H_2O_2 to get
rid of H. Chromous soln -

Try $MnSO_4$ just slight acid
+ use of etc as brittle as
when neutral —

Try a little MnO_4 in it.

Try plating warm
say 110 Fahr see if brittle,

Try little Cobalt in it,

Weston says Boric acid in
$MnSO_4$ makes less brittle + can use higher density

Nd only improves a little

Try in $MnSO_4$ some NaCl

also in double sulphate try
NaCl,

Yr Mother Where is
the Nickel ore

~~Dummidder get some high grade Reprosulfite powder Acme & Crayon Rosin.~~

Try all the metals for the Selenium dip from ok Nick

Solubility

	26 pts H2O at 17°
Na [illegible]	" 34°
NH4Br	35 " 5°
K2SO4	8 " 8°
Na2SO4	21 - 16
K Oxalate	33 - 17°
NH4 Sulfate	100 34°
Li2SO4	35

Find substitute for Velvetin wiping accounts, silk, Dry Rubber sponge, oiled silk Cloth, sponge.

~~Dont forget Keep Well of making Crystalized Nickel hydroxide.~~

Copper band .003 or less thick - [illegible] with NiSO4, then H2O, then Cu then Ni again Continuously till right thick & then Cut up & whole Exhaus Cu out.

~~O Dear How do you save Ni & Cu drip Sol - Have you a filter press to use pure Ni anode~~

For larger Movie use

4 Talking & of proceeding
Mechanism, all mounted on
1 Large Screen & Cracked Tripod
[illegible]

Photo Selenium on
3 X 4 Cu plate, wash
put in Camera &
focus picture on it
then lay a photo
plate over it see if
any image — try
Arsenic Sulfide,
Tellurium also

If in Bi battery the iron
Metal finds Tray Solvent Cuts
and only Enough iron (Fe)
thin pole left the discharge
at Alumed then rapidly
grow worse, use a
depolarizer with Exces
of iron —

Shortly Cobalt also
Cd — under like
Conditions then &
thick wires or 2
wires —

take a Wi ~~[illegible]~~ ix
from a Matches &
Mechanical Dep from
this to way & then
go ahead — ~~[illegible]~~
amplify

Try strong Solenoid
dip. metals, concentrate
dip Sc, for flake also
try Hg work see dips

Extract from old data
all about Bismuth,
to prepare for fulminate
crystals —

Examine all Na OH
used in battery by
depositing on platinum
high density — scrape
off black & find what
it is — hydrogen also

See if any Nickel
salt will puff up

greatly on ignition if so
can reduce by H &
use instead of flake

fulm a Cu with its
Blue, red + Metallic
also a Dup —

Keep 3 in oven
3 at 1" above
hot plate

Y. M. Ignite ferrous
sodium oxalate
~~[illegible]~~ Reducing
H + wash out

Oxlo Ferrous Ammon Sulf

(41)

In my good second book
I say adding up capacity
of self iron plates now
+ Self heated iron

Wattefey No pyro 57%
" Self Heated 55.84

Amp Efey Iron pyro 79
" Self Heated 74.06

Load Fe. Dump Fe
then flake the Fe a as
20 dumps for melting
10 flake each dump

also by Cobalt flake

Have 2 A4 put up now
plts not corrugated by
smooth pressed + 2 A4
Corrugated Treg + run
together —

Cobalt plated iron packet
try — A4 2 of them +
not corrugated —
Cobalt is cent passive
metal in next to Fe 2nd
Co least,

A4 Cells most irons can
be brot back by fully
chg + short chg repeating
several times,

Insulance Started 896
after 1 hr 2289
" 16 " 2548
after dead chg + 16 " 3047
short chg 3 times

Bi in the Fe pockets had 100 Runs
5% Bi on about 590
10% " 1195
15% 2190
after 150 Runs
5% 15
10 25 } all gone presses
15 15 }

This apparently shows on account of solubility Bi in KOH, that must use Co or Cd or get something in alkali that prevent Bi dissolving

---

Gall you need not turn back of metal masters only smooth edge + fix center of roll save time or money

Black ox Mg in tube with flake, Zinc — Chl ammonium — This should give good coll by precipitate a also hydrated Mn

---

~~Li small test 1/2 tests 300 mlg bismuthine brought more up from 1400 to 1600 much — both in 21 KOH + 15% NaOH 2 Li — plates dont as big improvement —~~

~~Try Z A4 + Z check~~

~~Try Selenium~~

Take up making Na_2O_2
by dry H_2SO_4 & dry $NaOH$,
old book shows it OK
~~very~~ too much loading
not OK' see book 24 dec 17

~~See~~ looks good - use
present 1 300 at 4 pm x and
use small mixer

Test our NaOH for Gallery
still strong cleaning
current using disc
of copper & test
Sulphur out 1

I more than
take enough to mix for 1 AH
heat to 212 in ~~[illegible]~~ 18%
NaOH, electrolyzing same as
used in Cell —
Then wash wrong & make
up Cell A & test

Test the NaOH for sulphur
& other things also
electrolytically on
disc. slip of Cu

see book 16. Cobalt 30% pure
very high. Think Cumwhere a
cell all Cobalt Sulfa pocket
& get high capacity out of it
Make —

~~Always a great disc~~
~~in England~~
~~Had an [illegible] getting on~~

With platina dishes as electrodes, test out Nuff going to G/Bottle & find out the nature of the black deposit & how to get it out —

Recovered flake broaded warm very dilute Oxalic leaves a thin white deposit on the lime find out what it this is — & find something to dissolve it off — OK use apothecary

probably lime from using bad water — test Nuff for lime —

Experts stop Ni cracking Mac — Double speed of matrix in Ni plating small dust 1/2 size pulley or less — saturate the sol with crystals of double salt & raise density 50%

Also put accumulator switch in & Reverse the current for 15 seconds every 2 hours — OK WTD

Plate 6 hours Ni transfer to Copper bath & just cover with Cu every 6 hours

Fuse

Edison starting up Ni plating in Galvi room using Saturated $NiSO_4$ — 4 bags. Enough solution to cover the most of the bags which then contained enough $Ni(OH)_2$ to keep solution neutral —

Steel density 1 amp till covered then increase to 3 amp till 24 amp given on

Rig up strips of brass then deposit .01 4 inch wide 6 inches long — will varnish back except edges + use this in a plate Ni & find out how to diminish tension strip will bend bad

Try K_2O_2 in Ni bath to destroy the hydride — also some selenous acid —

Try double sulphate of ammonia + iron —

ditto mixed together with Ni double sulfate —

Bending of Wabrix when Ni is put on one side could be prevented by plating on opposite side by new Selini — a clinch near center — preventing it from crack

If can get good iron plating without cracking on bending could put on 1/1000 Ni then .003 iron then .0005 Ni —

(517)

Clean Cu strip dry then dirty finger & pickers & then dry — Then try dip in Oleum or 66° H_2SO_4 — also Chloride Zinc — Oxalic acid Conc —

Try Clean with LiOH

Gr Mellor should boil a test of Fe_2O_3 and in Sodium Hypochlorite & then test for Sulphur.

We must do something about our KOH & LiOH & NaOH, full of something which blackens the tubes & blackens Copper very quickly & also to get absorbed iron out,

Take up with Niagara people about getting KOH. as good as can get from Germany or NaOH free from sulphur.

See if iron coated with
Sel Ammon decomposes
Cu Sol & deposits Copper
Yes does

Ni Ammon Sulfate
Sol 2.53 at 20 to 50° C
39.2 at 85°

Boil Red iron in NaOH
see if sulfur comes out
also Boil hypochlorite to Ni

Test Red iron for Ni by
glyoxamine

Remove everything Can
from 30 cc NaOH 18% free
same as used & Bad,
Then remove everything by
flame of Nickel or Copper

+ test as well

Go over to studio near Hallmark
book

Burn NaOH electrolyte
up to Red heat in
platinum dish &
test Copper – this
will destroy
organics – if OK
try Nickel dish

A 4-feet Zinc hydrox
is sufficient to plate
Zinc all over no
charging, set aside
10 days & discharge
see how much longer

Get samples Sb glass sand
[illegible] for filters —

In KOH.

Zinc	separates	Tin
Tin	"	Sb
Sb	"	Pb
Pb	"	Bi
Bi	"	Fe
Fe	"	Cu
Cu	"	Ni
Ni	"	Ag

acts def in other solutions

Consider possibility of
Cracked gas $Cu(OH)_2$
for dry cell — get more
[illegible] work out dry cell Reg'ind

Possibly 18% NaOH
saturated with
sugar or starch will
prevent SBat Cell
from losing capacity
Sugar if it charges
would be best.

---

to get an unlimited number
of hours pts second use
primary & in circuit
Carbon Granules passing
several sets + varry
Res if primary
for Wheatson

Save 6 female Masters
+ trickers blank and
make 6 working Mould
After that keep on making
female Masters until
Original Masters Spoiled
Mark the 2 - #1 & #2
4 rg. drip 1 every 2 pounds
slightly + let no 2
go on for 5 ~~drops~~ drips
before drip

After we make pounds
of defects repeat
Either female or
wkg Mould.

Order the 4 big Crocks
+ 3 bbls Fine sand
at once

Borax used in easily fusible
glass flux for enamels +
glazes

Also compelling iron
1 pt clay 1 feldspar 2 Borax
used in lead of lead glaze
for Crack

Metaphosphate Cu used
acids or alkalis —
Watts phosphate p 560

Dry hydrate of aluminum

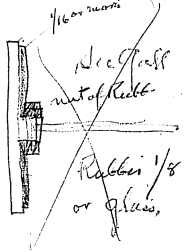
Dry pyrophosphate of
Magnesium

Frizzucia or neutral
Chop Zinc - Easily melt to
transparent glass
used in ashes

Try Ambliganite,

~~Monocalcium Phosphate~~
~~Melts~~ –

~~Cement rock~~ –



to

Jolual Solvent

Try ~~para cumarone~~
~~for varnish for~~ OK
~~back of dress~~
~~so not bleached in~~
~~Cleaning bath~~

~~Try up the 4 filter~~
~~with sulphuric~~

Also for H_2SO_4 bath

~~Try up the H_2SO_4~~
~~filter with potassium~~
~~hydroxide & heavy~~
~~platinum current,~~
~~The 3rd Rubber bath~~

Cant

Feed #1 Vall Carefully on M Points at 25.

Mac, plate N & every 8 hours reverse current for 10 seconds & deposit .005 then 2 lb wheat it alone

Fig out necessary quantities to combine with Silica Aluminum & fluorine & then add it just enough water to wet the Leadsolide & heat at 212 with reflex tube & exhaust, acc water required to exhaust to 1/2 % Dr

Increase speed due to limit of dropping solution & possibly make baffle near Cloth Bells to make cohirls

115 Rev

Test all organic acids with Lion to get an absolutely insoluble salt

Try 75 Fe SO4 & 25 Cr2(SO4)3 for Galloy & watch progress w/ Mg

Try 80% 20 Mg
85 " 15 Mg

to get a curve after

Dump the 75 & 25 Mg

Make 1 lb Each

See if anything can be done to Concentrate Lepidolite Crushing & Spro

Pho sing & plot a female metal Mash on plowing at 1/2 speed & looks HR polish again then plate a coke mould & compare with print taken [illegible]

Put piece cleaned Metal in Copper in Mash, ignited & sealed cork up without air space / glass stopper bottle full to stopper - dead paraffine. Keep out air!

Break Lepidolite up in 1/4" & put in tumbling thunk quartz up & roll grind the Lithia out - possibly leads extra quartz —

ground to $\frac{1}{4}$" meal
get yellow heat &
quench before
grinding

~~Get this done from~~
~~Rosedale~~
~~also the want~~
~~a little bottom~~

Its very desirable to
crush Lepidolite thru
180 mesh only
Allowing time
to leach at % Extracted
as compared to floated
stuff from other works

also determine the minimum
amount of lime necessary

Possibly ~~75 pts Fe &~~
~~25 pts Cerium that Ce~~
~~might account~~

~~Try 75 Fe / 25 Vanadium~~
~~Va might work~~

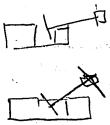
Really to try some
blanks 1/32 smaller

Send Copy letter to
Robins to Daniels. -

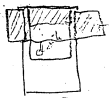
Experiment on Regeneration
of ambarella discards

Mac Start plating another
working mould in lengths
bath every 6 hours
Reverse Current for 2
Seconds only

Dally to see thinnest
Record he can make
not less than 185/1000
get weights + breaking
test



see if can increase angle
do away with jets + get
higher density in circles
Mi



raise filter on new NaSO4
plater

Process for getting Nickel Sulfate out of Ni 7% mud from Storage Gallery

1st Be sure all Nickel is Carbonated.

2nd See that Na_2SO_4 all washed out in the press.

3rd put mud just as it comes from filter press into lead lined tank with a lead lined paddle & shaft & either a lead steam coil in tank or tank steam jacked heated.

4th Add H_2SO_4 dilute probably 10% gradually the solution should have enough

Nitric acid to thoroughly peroxidize the iron & more acid is added when liquid gets neutral then run to electrolytic & continue to run until granulation and iron until it will be faintly acid to litmus. Any excess of acid will dissolve ferric iron.

The solution being finally acid will have some iron but this measures that all Ni is dissolved if after long running the iron persists in keeping faintly acid,

Run into a filter press without metals all washed by acid & wash & drain out till Na_2CO_3 shows

only slight precipitate,
The last wash which
should be light green
Can be separated from
the first strong solution
+ used to work a
second batch in the
tank at being used on
the fresh wash

5th The solution of
Nickel Sulfate is
very pure in a lead
lined iron or porcelain
kettle + boiled a small
quantity of the hydroxide
added from time to
time till all the ferric
hydroxide is thrown
out as precipitate
The Nickel solution
followed thru a
small press on

preferably bags +
Can be concentrated
~~Pure Copper w/ of some metallic iron~~
~~should be out for + recovered~~
~~before precipitating~~
Make some Fe(OH)3 mud in
water add Na2SO4 till
neutral + all Ni is
made Carbonate. boil
+ filter on Vac filter +
test for Sulfate
When OK add the acid
+ run thru process &
get Ni SO4 + Hydro off
test

Send over + get can
of Copper Mud

Ask O'Brien what he
did about the Mud
Fe(OH)3 + also ask he work
outside

Ishagh Jonstone,
am I correct that Ford is
to furnish the Company
with it as he said he would
to on last Trip, I suppose
I am to bring along Electric
Light ~~on my~~ Automobile
with head light & Chauffer
Think we should bring
along a Regular bedstead
with wide sheets & Covers
for Burroughs it will
be more comfortable for
him — I invited Sory
Daniels but he couldn't
Come —

The Girls to Open a Book
& enter all their & Hay
squad in a Book
seperate — large Book —

Send for O'Dair
after Dott has tried
plating on platina
black from Nash
& then reversing to
see if it comes off —
ask O'Dair if cells come up on
strum if they should further runs

Wire Herman about
Hard Rubber for 5 Bat

O'Dair & Charles
Monahan — Order
No change in Exchange
without my Consent

(15)

See if MgO will precipitate Ni from $NiSO_4$ —

If so QW M make some but least it might become crystalline by boiling —

Precip $Ni(OH)_2$ regular way with NaOH & varying amounts of ammonia, boil. Evap & percolate & make crystals

Also with no gases and slightly more NaOH, then after precip add H_2O_2 & boil.

Use $NiCl_2$ precip by slaked lime, just right amount, boil —

CuO plate.

MP Zinc 750° Fahr
Lead 618 "
Antimony 810 @ 1150
Sulphur 239 —

Try

Try Milled CuSulphide powdered 200 mesh & baked to MP in non oxidizing atmos

Fluoschreate K — 0.12 sol cold
" Na — 0.65
Antimonate Na, $2Na_2Sb_2O_7 \cdot 7H_2O$ 0.031 pyroantimonate slightly sol
Fluoride Zinc 13 —

Get a good work Chemist for at least year

Meadowcroft - find out where with the Chemist is now in France. I want to have him back

Assuming 3 days time necessary for producing a Matrix before starting with 1 moulder.

	M	MSM	7SM	WM	
0	1	—	—	—	—
3 days	1	1	—	—	
6	1	2	1	—	
9	1	3	3	1	
12	1	4	6	4	
15	1	5	10	10	
18	1	6	15	20	
21	1	7	21	35	
24	1	8	28	56	
27	1	9	36	84	
30	1	10	45	120	

Chinaman to use paper shell. Then nitrate it. Put over [illegible] semi dissolve

J. V. Miller moulder Red iron with a solution of Nasoff to 3½ Nasoff left and red iron then reddened by it. See if it self heats or what it does, moves 2 cells made.

Reduce red iron by charcoal or sugar — test for bullen

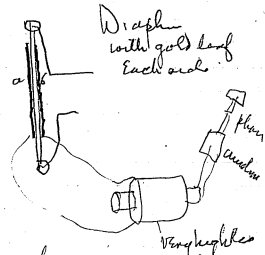
Size of old tube Nickel OH
is 20 l in $NiSO_4$ OH.

Q. Miller send me some Ni wire
not as low H_2SO_4 for platinum.

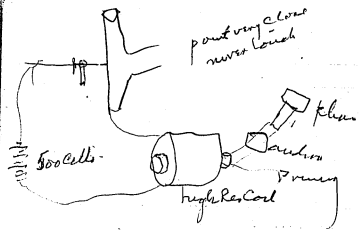
Also get sample anode wire
of Nickel from O. Bullinger
for platinum —

A man has patented a shellac
substitute. Dropped Pieces
then removed negatively from
by Thomas, Europe, etc. Patents
Measure the amount
this is from [illegible]
by Al Deck

Mass of H is 1.63×10^{-24} of gram
Electron 1830 times smaller
or 0.8×10^{-27} gram



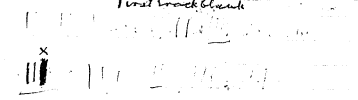
Wetted wright material Cad
in Dia should get
Electrofication Plow 1 side
N on other side
Sound in phone



Up to July 18. 1919 from old music

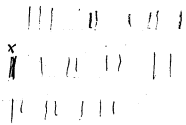
Good	415 Tunes	rated Fair
	292 "	fair to Good
	69 "	Good
	3 "	Good Good

First Track Blank



X is really the only one noticeable

2nd blank



only one really noticeable - surface only Dally 30 week is very weak to me at silence periods its 2 To 3 times louder on Reg blank to me using horn — Dally is perfectly satisfactory — I hear Mister now on account of weak Gent-sense Grace steel & funnel no angles & going as the record - Always the first time when have Good attained —

Started plating a submarine 8/4 at 4.30 pm - Cona No 504 - baguettes with stirrer at 1/2 lb of fine dry No (Off) 2 - 142 Revolution of motor 6 ampere. 8 Cells No Varnish on the back

Experts Ni plating from $NiSO_4$ keep decreasing

1st 6 amp per ½ dmsc rate, objectives.

plate 5 min wait 5 min allow hydrogen to escape

2nd plate 3 min 6 amp rate, 1 min ½ amp rate.

3rd $NiSO_4$ with 10% ferrous sulfate

4 " 25 "

5 50 " free metal of powder in sol.

7. Dimroldine Dye.

8 75 $NiSO_4$ 25 $CdSO_4$

9 = $NiSO_4$ + considerable peroxide Hydrogen

10. fine

11. $NiSO_4$ 75 $MnSO_4$ 25

12 $NiSO_4$ 75 $MgSO_4$ 25

13. Dimroldine Dye of preconcentration + 5 min plate ½ min Commercial off.

14 = Iron Anode & Ni Anode — switch Seperate with a switch, 75% $NiSO_4$ 25% $FeSO_4$ — Iron on 1/5th of the time Metalic Tacks in sol to prevent Iron

15 = Same as above but. Anode 90% of surface is Ni 10% iron, bath seperate.

16 - 75% $NiSO_4$ - 25% $ZnSO_4$

17 75 $NiSO_4$ 25 $NaSO_4$

Lelande – Try 6% of clay
Calculated as burnt, Mix of
burn at 10 to 1400°F
should have 10% of ferrous hydrate
& ferric oxide

get a Metronome + see
in what time our
Contralto sing the
times –
also have a good
time sing in Obey
Slow + then in 5
stages faster + faster

Can two Contraltos
or Contralto & Soprano
one sing 3rds to the
other + not same & above
or octave higher –

for Lelande plate
Ferrous bar & chloride –

Try 50 Barm K_2SO_4 on
Salient Map see how much
Resins formed get MgPat

M Davum 1.297 328
Resins.

Wash the hyposulfite Na
out of mixed [illegible]
have a Mallet Leather
Make 2 long lines +
test

Touch up Thow to put
8/4 on, also make up
New Solution of 8/4
also cleaning Solution
also fix up Galls Farm

Try dry Cu green hydrosp. 182 mesh & heat to 400 for binding CuO plate,

ditto 6% $Cu(OH)_2$ green & 4% Sulphur.

New foundland
Thence to Warwick
Goshen
Middletown
Wurtsboro
Eldenville
Napanoch
Wallkill
Accord
Kyserike
Hurley
Kingston
Ashokan
Phoenicia

Chichester
Lonesville
Edgewood
Tannersville
Palenville
Catskill
~~Hudson~~
Athens
Coxsackie
Albany

See P 384 to 385
Map Gilborn

Also Map Adirondacs
452

Grind some E Portland
Especially fine,
Mix with CuO & press
Then in Water 3 days

test to gelatinizing capacity
[illegible] CuO & Cement
dry then wet,

Dry Al_2O_3 – Sulfate Al,
Ignited dehydrated $CuSO_4$
& Red heat $Cu(OH)_2$
Clay at 1300 – ZnS
SbS. FeS_2. Calcopyrite
$Mg(OH)_2$ · BaS, CaS
(Pyrolusite, Nickel ox) $Ca(OH)_2$
~~$Fe(OH)_2$~~ Pumice,
Cu Silicate & $Na(OH)$,

FeS + Excess sulphur
FeS_2 + Excess sulfur
Phosphate Zn.

Dry KCy LiCy
m Eq –
KCl. KI. etc

Near Lollston, Mr Elliot
brass – sent to factory
returned and Consult
fix –

Ford Car Starting Bat

1st Measure Res of 21 + 28 Volt & Equivalent Ra Ob, to get Value of Spacing -

2 Use old graphite mix 1/32 thick or less -

3 Spot welding -

4 - see if Chloride the help Resistance and so much as to avoid

5 Weight dont matter

6 Use Cumerone with Hydrocarbon + flower of perhaps resistor, Platinum for filler

7 Cobalt may have to be used instead iron or Cd, perhaps Co for both plates, decision

5X6 10 P. 10 Neg - Cobalt plates each side 2½ 1000 oxide formed given Ford 15 plates 100 amp - 5 " 200 amp these Coupled with a 2 Reg. Battery plate battery for Lighting will do the trick -

Try Hyposulfite Lead on Plates from old Carbonal records see other Solvents - work -

Iron wire dipped in melted glass or enamel for Schenectady for Ford Stanley Cutting

Also iron wire peroxidized for Schenectady. Hammatley gave by dipping in roasted sulphate Fe powder & then bring to high heat to form Fe_2O_3

Aug 27 1919

Get some very thin asbestos cloth or paper that paste one side with $Ni(OH)_2$ other side with 200 mesh iron ppt, use second sheet to clean together light for Ford disch cutting — could see on the wire strips to allow gas to escape.

Waste heat Boiler
Cement

10 HP per 66 ft.
$160 Cost per HP Cost installed

Try Na_2NO_3 Ni as anode for making $Ni(OH)_2$
Get patent on that iron rod wood oil in Sweden

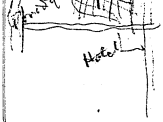
In plating Ni on Cathode to get hydroxide —
Use the Na nitrate test in addition use maximum amount of a very dil salt that will detach Hydrox as formed with Ecrystallizing in order to be very porous.

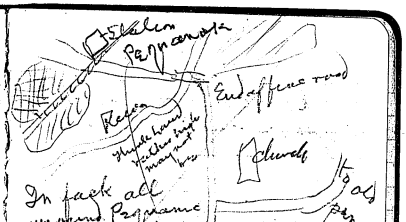
(95)

Mambert about
Autocaster test by
Lackawanna Mary.
at Scranton

Dinwiddie Mrs new
blank by Victor
process of ball
use Condensate Resin
+ 6/4 4 Parts hardy
in press -

Lectures, BR. at Signac





In pack all
around Propane
station is fine
level + many acre
in Extent & many more needed
by propane

Hardy any horses around
Propane station all farms

To stick Mylar into plate
for STB 7-0 use precipitate of
Benzoate in presence
Calc mg with organic
finely Crushed + dissolve the
Bro Ag, will an heat go
anhydrous + act as a
Cement,

On the Little Squaw RR
at Pompton Plains station
Ideal on left hand side going
to Pompton 1/2 mile behind
right back of village probably
Expensive. 400 ft wide —

On Greenwood Lake
at End Midvale
Town large flat
plat on lower both
sides River right near
its the End towards
lake

Treat the squeed $FeSO_4$
Contains $MgSO_4$ squeed
to oxide with $2H_2SO_4$
to dissolve out the
Magnesia to make the
Ferric Oxide more
porous

Make Makes Fe2O3 Very Porous

Food [illegible] Lay slabs of

Squeed Fe_2O_3 between the
perforated 005 or 008.
Wire in, secure X by rods
Remove & stitch all over by
sewing machine & thread
of 3 or 4 002 wire or sewing
cotton, then Repress — the natural
swell in Potash will
tighten

Drummond's wkg stuff

OK process for recovering Nickel from discarded wkg Moulds —

Moulds

1/2 pint. w/ 5% Solution of H_2SO_4 kept for several days at temperature of 120 to 130 Fahr. Resulted in total removal of the Nickel giving a $NiSO_4$ 99.8 pure

(Written all for pleasure)

Doughlenty tells me all the Copper electro refiners soon get their electrolyte loaded with Cu + Ni when get too much Ni they evap + sell it to Ontario Cop Co — get lot of Telluri + tash of chemicals

Amatens, 40 V — w

20 V section 1 tube 2 pkts — Cheap —

Kenilworth

branch road to Ancy Can Co Munition plant, now abandoned large — on Nat Elevator R.R. plenty more fill land Galvan factory & Village track north Thront, seems as if plenty all round

dident go to other ends of Munition fac

9 miles west of KR —

Good flat 30 to 50 acres
perhaps more across
Track at Reform School
Railway Trolley right
there, in fact there
appears 40 to 50 acres
available on both sides
perhaps more fairly
high

At Avonel – Pa RR near
the reform School
Seems to be Lots of Cut land
there – big steel equipment
factory there

Main line PRR after
leaving Melrichen
Cross over bridge turn
to right Come to Inn
on road turn right to block
small road left Come
to PRR, Seems to

Considerable fairly
flat land before you
Cross –

Try Acetate Soda in
Alkaline Sol to decrease
Chg Voltage. Salt
+ other good H absorbers

Try in NaSO4 acetates of
Metals higher in Electrolytic
Series than Al – try acetate
Al Ce Th Ur Mn
It may be Ni metal + the
reactant or acid is deposited
at Cathode simultaneously
$NiNO_3$ – gaseous the co insolubility
oxidized by the to NO_2 + O_2,
forming $NaOH_2$
With $NaSO_4$ + Acetate Mg
Ni deposited + SO_3 forms
$MgSO_4$ liberating Acetic
acid

Working with both Nickel
and Zinc anodes
Cathode simultaneously

See if Acetate No
or Mg Hard Vulcanos
of Acetate bowtgro
Tanyuro Vulcanos

Dalley Make a
disk of Chalk
10% Cotton flock
& Cumerone
Resin press
hard disc print
Schedule to
Saw press oil
for battery make
it thin as possible

Get samples of porous paper
White blotting + unsized
thick white paper for
Ford battery

Dimmeddie Copper ferrules
pipe Elbows

Get Veneers all kinds wood
shape them & test in NaOH
20% 140° Fahr Time test

Try the 2 Ketones in Plating

Try Cotton duck to seperate
thin layers molded blotting
paper

Get some Reg 72 mix
for Ford a

get some sheet 6 X 7
Ni plated + welded with the magnesium
005 - + some 1/8 plated for
outside

(115)

Try plating Cadmium
$CdSO_4$ + acetate
Mg — also $CdSO_4$ +
acetate Cd,

Try $FeSO_4$ + acetate Mg
" " + " Iron
plating —

Acetate Mg 6 + Zn Cu
Cd, Fe Co, Pb, Sb Bi
Sn. Mn, Al,

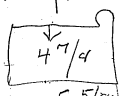
Rubber plating Tanks
hold 16 litres

Hand Rubber pump 5 gal
Mini - plant 50 lbs pressure
per inch ½ HP
Belt driven $135
Motor driven $225.

4.26 gal

Ford Lead

6P7 neg plates



1 inch
10 thick

300 neg plates (18 grids) 324 opp in Rollers
Expanded

It looks to me best way
to raise voltage on
Lelands is to have
more surface on
CuO plate, make
tests,

Not [illegible] required in flake
Cranes per Crane +
Output [illegible] Crane of flake
for A4 — [illegible] ½ [illegible] dollar
power plant.

Put Selenic acid in Cu ~~pl~~
$NiSO_4$ - plate heavy density 5 sec
wait 10 seconds for Se act
then 5 sec plating —
See if Cobalt sep out,

See if $NiSO_4$ + $CuSO_4$ -
plate with low Voltage for
Copper & great Voltage to
plate Ni + if Cu deposit
separate, The Cu is many
4 to 6 times weaker than $NiSO_4$
with low V only Cu plates
out with great Voltage
Ni will only 1/6 the of Cu
plates out, ~~Ni~~ bad
plating try Acetates
Mg Mn Zn in addition
use Carbon anode

A 60%

May get this to work

try formate, propionate
Butyrate Lactate, Glycollate
Oxalate Malonate Succinate
Tartrate Citrate, of Na + Mg
Oleate + higher fatty acids
Acetylated compounds +
Aldehyde compounds

Nickel Potassium Cyanide reduce
at Cathode to sub oxide
Nickel — non conducting

Cycle of Plate plating

June 1st wash	.15	min
wash	.11	"
Wash Copper	.06	"
In Copper	.05	"
Original Coat Copper	.50	"
Out of Copper	.055	"
to wash	.055	"
wash	.11	"
to Nickel	.07	"
out to Nickel	.08	"
Nickel plate	.35	"
out nickel	.055	"
to wash	.055	"
wash	.11	"
to Copper	.06	"
in to Copper	.05	"
Copper & Color	.25	"
Total Cycle	1.30	"

Average labor time 250 lampers
2 hours 45 men
stopping time 5 hours
V Cu 35 - Amp 250
V Ni 110 " 850

Sheet is 21 X 36 .008 Thick

The Voltage & Amperes are for 10 Drumm in series -

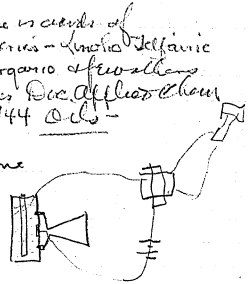
Amount of hydrogen absorbed | are reduction by H

Fe.	9 to 19
Ni	17 to 18
Cobalt	59 to 153
Mg	1.4
Al sheet	1 to 2.7
precipitated Pd	37 to 46

Acetic Series Acids
Acetic, Butyric, Valeric, Caproic
Caprylic Capric Lauric Myristic
Palmitic Stearic Arachidic
Behenic Lignoceric
Acids of the Acrylic or Oleic
Tiglic Hydroxyl Oleic
Rapic Erucic

Then there is cards of
Lindic Series – Lindic Galvanic
Electromagnetic & Frowathers
Thorpes Dic. Applied Chem
page 744 Oct –

Scheme



polarization of metal
due on insulator
Dropping, Voice shakes
& deposiangers

Making Antimony see
Schnabels – mat 56 –
see " a process for separating
Ni to + Cu by roasting –
& marked by sympathetic
sort drill No 1

Sept 12 1919
Recomposition of Ni tension
to 2.09 Volts for sulphate
1.85 for chloride

Mention in patent that
acetic acid alone ~~acid~~ attacks
the Ni + only Undesirable
obtained but if an acetate
is used Ni Sulphate very billiant
& OK – also Ni Ammon Sulphate
not good as ~~ammon~~ salt doesn't
permit high density properly
rad

Try head balling like
our Ni Fe for Fone
using Rubber for
pressure or glass &
Rubber ball for
springs –

also try Ni + Zn
in Electrolyte containing
1/2 saturated ZnO
& an acetate NaAcO

See if with Reg Na tubes
in clear NaOH 20%
1/2 saturated Zinc
Can plate out Zinc
also acid acetates
to see if absorb it
& improve plating

Get explanation of Shales
dept sale - Something wrong

Haas Moore Jones and
40 questions for Cook
maker - Collo Manufacturer

Ford Bailey Separators
Paper Cloth - Asbestos
Rubber Sponge Hard Rubber
fibres made into cloth
Upon wire cloth Soda Fe_2O_3
Perforated wood + rubber
pins - fibrous Gypsum paper

Sept 14 1919
floated powders pulled together
to make a thin porous sheet
floated NaOH, on steel Na plate
then float Fe_2O_3 or CaO MgO -
Then Iron mix - then steel wire
on -
prehumorized Carbon paper
before shrinkage to Carbon
see if stable in NaOH
Squirt rubber into fibres in
Chl Sulfur + make Cloth

See if with Ni Electrodes
in a Sol of Acetate Mg also
Na will give higher acid
also use Acetate Na no
NaOH sol also use
Sulfate Soda + Acetate Na
+ Mg et -

Arrange time tests hot 120 +
Cold 70 NaOH 20% + 10%
NaOH, for dif papers Cotton Wood
+ Linen fibers + Parchment paper

also Cotton cloth, writing paper, Asbestos fibrous gypsum, glass wool, slag wool felted, put in sections so one removed every month for test,

Try 250 cc $MnSO_4$ + 6 gr Acetate Mg + Na + 5 cc $CuSO_4$ with Copper + the Oxides to keep up Conctn of Cu

Speak to Hardy about Specific Claims for process against a Mechanically Electrolytic — ditto re Alkali — as against [illegible] process for trade Electrolytic x c.2 Wade

p 119 also mention that the small amount of Electrolyte is sufficient as Mulcher's lead battery the Electrolyte [illegible]

also Wade p 109

Try depositing Zinc on Zn in 1/2 sol Dicalc Lenoch using Ni Tube — with Acetate Na see how many hours by previous Pg — amp

Cellulose in head Cathode oxidize by PbO_2, Try coating the paper 1st with PbO — then $BaSO_4$ — This will keep paper away from the peroxide

Res of H_2SO_4 at 5% sol is almost as low as 20% sol, Think same is Case with Alkali think 10% KOH strong enough or 7 @ 8% NaOH for Jon

Mumbert - Have we received
price on Bates Machine
How much it costs
are we making a profit

No. 04½ red Gallery green
floated on blotting paper
2½ X 4 5/4 — 11.6 inch
2.5 calipers .012
3 .014
5 .017

2/2 gms is 215 Milg per inch one
side — 430 per plate both sides

20 P 20 N — 2½ gms Mitt on
side will give compared to
A 4 — 20 amphours —
That is enough —
Day cut out 250 Milg per
inch A 400 Milg "

While Hatcher about
Zinc paint —

Salol. 3 Hours

2 -	Edge up	6th bend
4	"	—
8	"	5 "

Citrate Lithia 3 Hours

2 qr	OK	13th bend
4	"	20 "
8	"	15 "
12	"	10 "
16	"	13 "

Citrate Mg - 3 Hours

2	OK	15th bend

Acetate Magnesia 2 Hours

2	OK	8th bend
4	OK	10 "
12	OK	4 "
16	Edge up	3 "

Citrate Soda 3 Hours

6	OK	2nd bend
8	OK	5 "
2	OK	5 "
4	OK	8 "
12	Edge	—
16	OK	8 "

Acetate Nickel 4 Hours

2	OK	3rd bend
4	"	3 "
6	"	4 "
8	"	10 "
12	"	8 "
16	"	10 "

Citrate Nickel 3 Hr

2	Edge up	6th bend
4	peeled entire	—
8	OK	4
12	OK specs	—
16	lifted	4

KIJ

Make 4 hour test on Acetate Lithia, as Citrate Ni. is best of all –

Think I have made a mistake go over book again & make more careful table of results

Try colloidale Magnesium hydroxide in a dilute solution of Neutral $NiSO_4$ and Ammonium Chloride Cause of H is fed and given off insitu at the point of deposition of the Nickel

Also try Nickel hydrox made and agitation

Going over all the Ni Plating Experiments I find Sept 17 1919

That 2 Electrolytes are far best.

2-4-6-8-12-16 Citrate of Lithia 3 hours 100 ma per inch All OK. average number of bends before breaking was 14 –

The next best and most practicable is Acetate of Nickel 2-4-6-8 12-16 at end 4 hours 100 ma per inch all OK average number bends before breaking 6.3

With this solution its acidity can be corrected in fallen press by Ni hydroxide

Make many weak acid salts of Ni to put in Sulfate Ni
Those that dont hydrolyze in dilute solu electrolyte

Only metals according to LeBlanc who says decomp of water requires 1.03 V multiplied by 1.63. as always alloed +H.
That the metals below H 1.03 so Au Pt Ag Hg Cu Bi Sb As + Sn.

Neumann Electromolyserves Mg Al Zn Cd Fe Co Ni Pb H Sn Cu Hg Ag Pt Au. Old style but not Chrom at no H
depends on the solution

Hanley — After a test charge at 100 ma for 2 hours — then put on discharg & when it gets to 140, Run amp up till it goes to 1 Volt & note the amperes only hold for 2 or 3 seconds. Then go ahead with discharg req who will give us discharg rate in amp at 1 Volt, & tell us what cells will do —

Drop Al Mg Fe Cu Ni Zn Pb, brass. m.
Aqueous sol selenic acid 1st to see if film formed permits stripping
2nd effect will give various Colors.
3rd effects protection to say iron sheet under adverse conditions

(125)

Each Rubber bath holds
4.26 gals 150 Baths
639 gals – should be
33% Excess for circulation
& filtering – 210 gals –

Total. 849 gals

24 oz Nacetate per liter
90 grams per gal –
approx 17 lbs acetate
Nickel –

Look for out amount of
$NiSO_4$ Crystals necessary

Make 425 gals of solution
$NiSO_4$ and 8½ lbs Nickel
acetate –

Pouch. Cover in Ford Cell –

1 = Long fibre paper – Veneers up and
2 = 003 paper mx one side as Cellar
Then thicker paper Fz 1 side
Ni other side – No filler
3 Precious treatment with
20% alkali hot + wash +
dry + press
4 Float mix on – screened to
fine size, dried hydroxide
that holds shape –
5 Crystalized $Ni(OH)_2$ – Loth.
6 Assemble moist, screws set
so just hold together as
swelling by water –
on pulling in let it swell –
then form then final
tightening
7 free border around

8- Phyrthin steel

9 ideuncle with Fe on one paper & NiOH on other preferable to Fe & Ni on opposite sides of paper. Wicker

10 = Outside plates bottom Lugs increased area insulated by rubber & bottoms of Rubber to prevent Coupling Cair — Wood could be used.

11 = floating inert metal powder like MgO or BaSO4 over the previous mix prevent Explosion of gases

12 Put on as strips to permit escape of gas

13 = instead of strips use perforated paper, holes opposite but as no mix at holes will not cross.

13 - In floating paper with mix put a stenail on top of paper, float + left stenail. This leaves streaks on paper free of mix — hard Fe + Ni Watch When put together + .010 Ni .014 Fe, used + .006 paper for Each, The long fibre will prevent the flakes from swelling much + there be .028 thick where mix is + only .006 where none + at Crumpt scroll so gas will be prevented from passing out freely

Whale Epide 3 cells found
Total lost 40 lbs

Pr Mix wood weigh 9½ lbs

Thickness of main plates Ford Electric
015 – 79 grams, or 5 grams per 001
Each bolt & spring 1.95 grams –

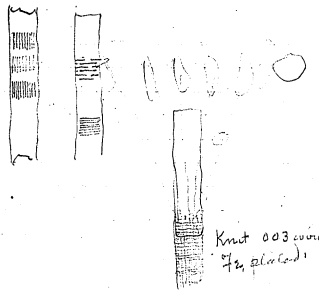
Pr plates 007 – Each weigh 35 grams
140 plates 1400 grams
16 bolts 3.12 grams
Pr & Ni Mix 40 plates 480 grams
General Brewster
Can't parts

Take Reg Ni mix
put in 20% HaCOH,
with Reg Lithia
use flasks with reflux
& put on hot plate

Keep time these 2 or
3 flasks, once a week
remove enough for
2 small test cells
wash free dry & have
made up – Then
to Experiment on dehydration

18 Cranes
4455 lbs Ni Cu sheet per week
50 hours. Total consumption
current 40000 KW.
Current for plating only
38000 KW H – power 2000
per lb of Cu Ni sheet 8.98 KWH.

A 4 Ni tubes total surface
exposed 427 inches –
Open to electrolytic 69 inches
only This is pretty small



To prove that acid radical is given off - use 250cc $NiSO_4$
4 grms Nitrate Soda +
6 grms Acetate Nickel the
Ni from decomposition of the
Acetate by the NO_2 should
take care of Nitric + unless
at hydroxyl of Ni appears
on Chloride, Ni will be deposited

J V Miller put 2 lbs of
Reg Nickel in pot with
oz reduction by H + send up

Speed of plating Wheel
for flake should be 2.7
times longer -
Keeping Cu 25 Ma +
Ni 300 Ma

This will give same thickn
of Cu + Ni as Battery Co

Wheel 2.7 times present
size — say 2½

Take several Ni tubes
of press fit made
hydraulic dry + also
wet with NaOH after soaking
several hours -

Also have some tubes made
Cu's outside, Road + without
fuelling rings on ground off
Cu's completely fed on
rings + test.

L Oil, see of Carbonate
Nickel with acetic ient
best way to make
Acetate Ni –

Wonder if using Carb Ni
in tube of fuelling in
Nitrate, ~~[illegible]~~ Carb Na
would swell or not
+ not of – in place
of Hydroxide,
also Ferrous Carbonate
in ½ pocket –

get Chromic out of NaOH
KOH — Silver anodes
Dissolve Chromic + double
over + over again → Oxide Silver
Carb org –

Use ~~[illegible]~~ Electrodes
~~+~~ smallest amount of liquid
Have Cu Electrode corroded
+ no $CuSO_4$ in solution –

3/4 ~~[illegible]~~ 1/4 ~~[illegible]~~

Square Centimeter	0.155	sq inch
" Decimeter	15.500	sq inch
Millimeter .001 Meter	0.03937	inch
Centimeter .01 "	0.39371	inch
Decimeter .1 "	3.937	inch
Meter	39.370	
1 gal USA	3.785 Liters	

C1351

~~Ask GM to figure out~~
~~Cost of his Nickel deposit~~
~~per lb of Metal~~ —

Perhaps CP Nickel strip
anode in NaOH well
from Chl Ni + precipitate
NiOH with chlorine tangled
in — Or an emulsion of an
Easily Chlorinated hydrocarbon

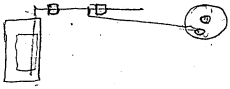
Try plating Cadmium
CdSO4 — 250 cc
8 grms Acetate.
Cd — also another
acetate Mg

ditto Iron
" Zinc
" Cobalt
Tin
~~Lead~~

ditto Sb —

Flake Out.
250 cc NiSO4 —
8 grms acetate Ni
+ 3 cc CuCyKCy

Fred ott Put stirrer back
of the anodes —



also make this — shiny

Lubest sol try 1 drop of
detailed Dimethylglyoxime
see if improves — make it light
blue drop + yet increase it

Try Conc. acetate Nickel
+ 6 grms Acetate Lead —
see if Ni depositing O/K
+ note crude deposit —
also make acid with
acetic after 1st Trial —

Cupric Chl MP 498° C (932° Fahr)
Cuprous Chl " 434 C

If the new succeeds in making
Syrupy Acetate Magnesia. Use
10% this in CuO plate + ignite to
decompose it. Wholly free of
Chlorides MacOtt & Sharp

Copper Ferrocyanide is soluble
Potassium Citrate —

Meadows ~~after~~ after Calculation
of Screw ~~for~~ 6 coils for
Condition

5 X 6 30"

- 10 P 10 Neg

- 300 inches 1 side 600 both

sides, 600. $\frac{1}{1000}$

300 2'
150 4
75 8
37.5 16
18.75 32
9.37 64
4.68 128
2.34 256
1.17 512

1" X ½ inch in $\frac{1}{1000}$

4 - ½ X 1"
1500 MA hours
$\frac{1}{1500}$ thick

4 at sharpest
$\frac{1}{1000}$ thick
$2\frac{1}{2}$/mm 10 clears

3 mm 30
6 " 15
12 7.5
24 — 3.75 1122
48 — 1.87 seconds
96 — 56.

3600 / 1000
1800
900
360
180
36
18
54

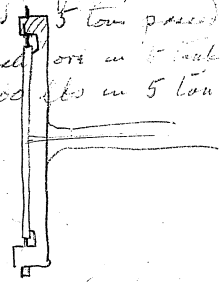
20 lbs water 1 lb Coal

20.000 lbs to Ton
1000 lbs Coal – $3.00 –

25 cent. 300 lbs, One cent.
lb,
50. 1200 (20 c
17

1000. 20c
10 gallons
1 Coal Scuttle
1 " Heat
1 Coal Scuttle
2 Coal Scuttles

15 tons HO total passed
5 tons passed off 1st pass
2nd + 3rd 5 tons passed
Hence fuel on 1st Trak.
hence 300 lbs in 5 tons



1 ton on each 1 Ton HO –
added ton to 1, withdrawn
added to 2, so on
5 tons passed leaving
5 + again 15 tons
total passed,

Dec
106 000, Cabinet
bal Dec 31 1919
Sure no doubts —

Dykman statement
7th July 1919
12000 in Sept
9000 in Aug

[158]

92
4
368
70
25.7

12
24
48
40 24
45 288

1200
960
1080

15 | 288 | 18
14
138

50 –

65 –
30
95

2000
1000
3

3000
150

Dykes

21
36
126
63
63

12000 bell!

44 | 110 | 2.5
88
220

144

756
20
36

57

2.5
3
7.5

183
3
9.15

60 | 110 | 1.83
60
500
480
20

1.75
4
7.00

1.75
4
8.75
7.25
1.50

150
4
600

150

Notebook Series -- Pocket Notebooks
Notebook, PN-19-10-07

The dated entries in this pocket notebook are from October-December 1919. The book was used by Edison to record ideas about business matters, experiments to be tried, and other tasks to be performed. Some of the items have been crossed out. The book was probably used in both directions. On the last page is a list of twenty-six projects that Edison was either working on or contemplating. The list serves as a rough index to the book. Among the projects mentioned are an improved Lalande primary battery, a starter battery for the Ford automobile, an increased-capacity A4 storage battery, a chalk telephone amplifier, and a method of processing lithium ore. Also included are various phonograph-related improvements such as a varnishing machine and a blank power loading machine for disc records, an adapter to play competitors' disc records on Edison phonographs, molded cabinets, and a cheaper Ediphone record. In addition, there are numerous notes and drawings concerning diamonds used for phonograph recording and reproducing. Several entries labeled "Amberol" indicate Edison's continuing interest in improving the quality of his Blue Amberol cylinder records.

Among the business-related entries are a list of manufacturers of phonograph cabinets, along with their daily output; comments about the Brunswick-Balke-Collender Co. and other competing phonograph companies; notes on recording artists and musical pieces; and statistics on defective Blue Amberola and Diamond Disc reproducers that were returned by customers. Also included are remarks regarding the finances of the Edison Portland Cement Co. and references to inventions to be patented. Among the Edison employees mentioned in the book are Charles T. Dally, William W. Dinwiddie, Elmer E. Dougherty, William Dykeman, Stephen B. Mambert, William H. Meadowcroft, John V. Miller, William J. O'Dair, Frederick P. Ott, and Ludwig F. (Louis) Ott. The pages are unnumbered. Approximately 150 pages have been used.

Oct 7 1919 —

Try Dry ammonium chlor drop in flake into —

Make some Ferrous Carbonate & put in reducing pot & Reduce by H & heat

Ditto Make Dry ferrous Carb, dry & oxidize hot air Reduce by H,

Why not use $MgCO_3$ Expensive Substitute Solution for Recovering Ni & Cu to make carbonate

See if following are reduced in Hahley Tank check 1 pass
Ferricy of Ni
$FeCO_3$ dry

(13)

[illegible]

Also [illegible] 250 cc [illegible]
and 5000 [illegible]

[illegible] 125 cc [illegible]
1250 cc [illegible] + plate
[illegible]
[illegible]

Also 5000 [illegible]
200 cc [illegible]
[illegible]
[illegible]
[illegible]

perhaps on 2500 cc [illegible]
full of [illegible] [illegible]
everything [illegible]
Cathode 500 [illegible]
6 [illegible]
[illegible]

Daughter to get information
of great [illegible]

Tell Nicholas Kendall
will [illegible]
go [illegible] I will go
[illegible]

Close up my gate room
+ take down the press +
put tables in like chem room

[illegible] $CuSO_4$

[illegible]

5 [illegible]

Use some [illegible] $HgCl_2$ salt or copper [illegible] for prevent tissue

Plate nickel & wash quick & put in $CuSO_4$ strong, then [illegible] deposits Cu —

[illegible] of [illegible] must prevent the [illegible] reducing Cu salt by $HgCl_2$ or a Cu[illegible] or $CuNH_3$ —

Try LOCL CP plate for the say to see the $CuSO_4$ use use is also bad of iron — LOCL made right

Try V III make 4 pockets. Change fully & digging to 5

2nd One 2 of these cycles

3 3 cycles

4 4 cycles

put in Water & pond over to see if open see stages of coloration of the iron

clean 4 tubes, run same way —

Send for W. C. Cohen & get some data about damper & have him get me some data,

Test Eng. Cable for iron

Get some of Reg. and & compleating & stamp & sol for test for iron

Y. Miller, on our Kettling
NaOH tested for Alumina also
Chlorate + perchlorate

When Ferrous Carb made
acid to ~~Y. Miller~~ reduction

Get costs making Red iron
from Sulphate detailed
Costs,

Meadecroft get Chlor Kcarb
on Hydrogen, Langmuir & Green
Mg

Hanley Make Crucible cells
with 2mm Open weave +
Close weave but the paper
between prevent slight alkaly

Chrome One Lung Melt NaOH.
+ let it Cool off so it gets solid in
1 hour — break & put Gallium +
top for NaOH

Try hydroxide Aq Cold on
NaOH. + let settle
Ferrocyanide Aq
Thiosulphate Aq V Sol.

Take polished Alumide,
N.S.O.4 6 Molybdate, 2" surface
plate 300 Ma 3 min —
The Cathode should be blue
when polished with silk
see if can be rubbed off as
flake — dettle coat Copper
then Ni see if can be rubbed
off as flake

We succeed in getting a good Iron Cark and a lot of Manganese [illegible] see if Carbonate Iron is fred from Carb —

Write Henry Wilson for samples [illegible]

Lelande Tar Coal Tar Pitch boiled 750 or just under oxydation point

Trinidad asphalt

1/2 H_2SO_4 1/2 H_2O

6 drops of this in 100 cc would blue Congo .2 cc

Think we should make another long tunnel for Columbian Mineral

Speak to Wattles to use only 1 funnel where possible for Mellon Stuart

Cu layer for flake at SB is 8325 Ma seconds per sqr inch

Ours only 3600, hence we should go 2.3 times slower say 2. This would make 2 cycles per hour

Nickel 37300 Ma seconds per inch
We only 18000. Ma per sec per inch again should go twice as slow

Hints -

1 = Try fresh Acetate sol & keep off from getting tainted by adding Ni OH. Each 8 cycles -

2nd May be oxidizing Compounds formed ex Cu Try diff reducing agents.

3 Try plating Ni alone from Acetate sol. Tried and detrimental of old add Copper later

4 Try the Ni Cyanide Cy sol on hand -

20 Oct 15 1919

474 lbs ~~Carb~~ c Ni SO4

95 gals water

22 1/2 lbs Acetate Nickel

1000 cc Glacial Acetic

This is for 20 Reg Nickel baths.

Easter Cell people Niagara Falls Can make a Potash as low as our Soda 0.2 Cl — have Hg Cell

I think our troubles in bad flake plating is Exhaustion of the Copper by heavy Current in Nickel plating. We can correct this easily by increasing size of Current on anney Cu Anode attached to Nickel could shield it from general solution when its giving off Cu which would be consumed by Nickel into general circulation which starts started.

Try in Reg Dep -
Anney 120 Ma Ni 200
= 220 —
also 40 Ma Ni 200
= 240 —
Try Auxiler see of Current decides Res Fall between Ni & Cu Anodes —

What is the 8" disc + machine 10000 for, Luhr letter to JVM —

Have drawings made to scale by funnel & reflection & form of wave

go out to Studios & bring Hayes to help Hardy Cell & weight bench —

O'Dair — look out for Aluminum accidentally got in Electrolytic hunt for aluminum utensils —
Dakotape — also test Cell Electrolytic, Try Other Electrolytic

Run 6 with 150 cc $NiSO_4$ — 100 H_2O
6-Citrate Li — +
3 6 10 15 20 free Citric
acid — if precip.

250 cc Double Sulphate Ni + NH4
+ 6 grms Acetate Ni
alone acc. placing of sol
glassy ~~acid~~ Nickel
5 cells as above
But 3 6 10 15
free Acetic

see if there is a Ni NH4 Acetate

Dup the 125 $NiSO_4$ 125 Water
4 grammes Acetate Ni
+ 6 10 15 25 free
Citric acid

ditto Tartaric free acid

Try 6 cells

200 $NiSO_4$ — 50 water
8 grms Acetate Ni

150 - $NiSO_4$ 100 water
8 grms Acetate Ni

ditto 100 $NiSO_4$ 150 water
8 Acetate

ditto 75 $NiSO_4$ 175 water

ditto 50 " 200 water

ditto 25 " 225 water

Try 250 cc $CuSO_4$
8 - grams Acetate Na
Keep temp up to 120 deg
2 Hours 200 Ma for 2"
No acid

ditto drop but 6 acid
" " " 10 "
" " 15 "
" " 25 "
temps 120° Fahr by setting
tumbler made beaker filled
with water so when stand
current to 120 - Wrap
Cloth around beaker & cap
low heat after filling
to 110 pour out a part
in 120 water as often
as necessary during
the 2 hours -

Send John over to Oldham
with homeopathic vial for
filling with Cut sheet flake not
seperated — + then expect
to seperate Think it would
free HCl or H_2SO_4 in addition
to $CuCl_2$ - Make some $CuCl_2$

Try 250 cc $CuSO_4$.
no acid.
Drop 6 acetic acid
10 "
15 "
20 "
125 $CuSO_4$ 125 water
25 acetic.

Try 200 Ma 2" sq inches
after this run put in fresh
Cathodes + 6 grams
Acetate Copper + remain

LOCC

Melt together Sulphate Sodaz
Sulphate Copper + pour out,
also with 1/5 of their weight of
Solid Soda Also 1/3 —

Try $CuSO_4$ dehydrated but 1
H_2O left same as our man
uses it —

Try 1 Cell Conc H_2SO_4
200 cc add Sulfite Soda
till 250cc then
6 grms of citrate Iron
ferrous or 10 cc glacial
2 Hours 200 Ma 2"

Try on 200 Ni SO_4, 50 H_2O
8 grms acetate Ni.
15 cc glacial on the new
Clinching Cathode —
+ deposit 24 hours
1st Accurately Weighing
Ni Anode + find the

loss of Anode + previously
Weighing Cathode roughly
after plating to get gain

Roughly see if dull red
coll throw off 10% prone dry
Iron Carbonate

Roughly see Watts
"Carbonates" How to make
Hydrogen H_2CO_3

Manbert Adolfy
Shaved 1st to [illegible]
Chrom Drill, 1st Steam
Shovel Splendid
long Kiln reducing
Dust — reducing
Oil gas

Mt Mach 1096 C
Mt Mach 780–820 C
possibly can distill of Mn Cu

~~Mn 790–860~~
~~Mn~~
~~Can prep Mn from or K.~~
~~Pure volatile distilling~~

~~Medium Mn for~~
~~"Smith Mn Cu – Analyses –~~

~~Mn Cu – [illegible] in [illegible] have very large silver~~
~~surface of 1/5 Mn [illegible]~~
~~for 6 months –~~

Try 6 Cells Copper,
with Dimroldic Rope Trace to
larger quantity – Then add H_2SO_4
& Try again Then a new lot
of 6 Cells if H_2SO_4 works, use
acetic acid –

Try

6 Cells
Conc Acetate Copper
No acid –
Then 6 acetic Acid
10 "
15 "
20 "
25 "

Formate Copper
125 cc formic
125 cc water. no acetic
Then 6 – 10 – 15 – 20 25
acetic –

2nd test 6 grammes
acetate Copper –

6 Trichloroacetate Cu
125 + 125 water no acid
6 Acetate Cu – No acid
Then 6 10 15 20 25 acetic

125 ($CuSO_4$?)
125 Water
6 Citrate Copper in all

2 6 free Citric Acid
10 "
15 "
20 "
25 "

Try Benzenesulfonate Ni / also Cu
with Ammonium —
Think we have some
~~Benzoate~~ ~~Sulfonate~~
sulphosynnic acid — Butyric acid

Try Ethyl Acetate in place of
Acetate Ni
Acetate dirin
Malic Maleic Malonic
Mesoxalic picric

So use a Nitrate or Chloride
Must have an acetate whose base

is very oxidizable Acetate of
say paraphenylendiamin —
Amidophenol Acetate Zn, Mg, Al, Li, Na, K
Or a sulphite of a base
Thus could prevent NO oxidy
the deposited metal —

Perhaps Glucose might do,
formaldehyde so — Tartaric acid

Try 1 Cell — 100 cc $NiSO_4$
6 Acetate Ni
100 cc Acetic
50 Water —

When Paterson goes, have Chemist
Come over, explain Cu Cl
Method Nu Cake & preparation —
Could then use all
Copper CuO

~~Imp Stt - Cover 6x8 Cathode Cell with asbestos + wind 1/32 Nichrome wire or heat insulating wire around it + asbestos over this or against the glass to heat cell.~~

~~Opt from Management last 4 Reports of Lebrand Ign Stat.~~

~~See MP Zinc BP Aq - what Aq Salt of PbCl in NaOH, KOH, Cent Zinc Aq in from In arrwildanis or a Aq Salt Reduced w/ Zn spring dislag~~

Work in
Electrolyze a Caustic K with 2% KCl - free of any free chlorine & can be got off

Try expt moulding sized grains Sodium Sulphate, say 1/32 20% + after burning dissolve out the Na SO4 to get porosity. Test by diffusion & by Electrolyte in Lead Jacket Leader 1st to fill porosity -

Think CuO plates after burning should be soaked H2O to get CuSO4 out of pp [illegible]

Make a plunger E/o
so as to Mend 4 holes
in our CuO plate
also 1/2 thickness with
another half op —
for drop tests.

Note present Construction
2 plate CuO 500 amp
battery — Design
another to get twice the
CuO surface — as cheap

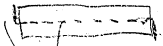
Get better way of Copperwing
Sea of weaker acid Boracic Acetate
etc will do it more quiet
ditto Acid Sodium Sulphate + Zn mush
rotating it in mush —
glycerole + NaOH Cong mush — very hot.

Make plate with perforated
Copper sheet in center
broke 1000 + then get contract
with it see if it works at once

Smith make precipitation from $NiSO_4$
with NaOH in presence of Concentrated
Salts Not precipitate by NaOH —
Salts To be removed $NiSO_4$ with
dextrose

6cc NaOH + 8% Dilny $CuSO_4$
clean etc if acid + how it
appears —

Lilandi — 1/1000 Cu
plate perforated sheet
to be moulded in Center
of plates need not
Copper thin —



turned over at Edge
to make Contact with
frame

McLeod find out where the sample of sulphides are shipped from Boston

Walter Miller - see if you can get a trial off Flora Perini Mazzarolous first around Willoughby & McDonald

Ask Dykeman not present. was sent up to get them [illegible] not being [illegible]

Monthly Clark Ele should have increasing of percents every month [illegible] Check with assembled Reproducers on hand & [illegible] - Need five percents closed [illegible]

McDonald = find out who is Head foreman of Clock Tinker [illegible] Co [illegible] - Mark clock [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

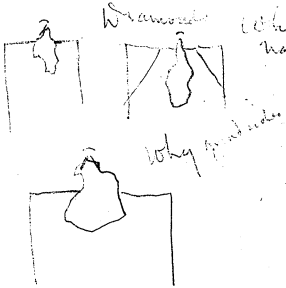
Need [illegible] get 50 lbs Nickel [illegible]

New Mixer - 1st Run -

109 lbs Clay	70.8%
35 lbs Punch	22.8
9 lbs flock.	6.2
	99.8

apparently OK Mixer probably do 250 lbs. 135 lbs steam pressure smoke all went outside unloaded 2 or 3 min Run 1 Hour 10 min - time started pulling stuff in Clay & flock heat to 250° [illegible] before pulling in Mix.

Mambert to get the upholstered
seat used & stand in Cement
Reservoirs, also of Cement
tiles which were extended
up due & what stands
6 g. alone,



Flake Saponin try and all
thru 180 1st down — another
Lot thru 10 feet trap
see which succeeds —
Coarse fat Cook

Start Smith on
Cut Dry Cell

Patent New Cell
Plunger —

Rosen Soap
Na Soap — K Soap
Silicate Soda Silica Jelly
Alum Alumina Jelly
Tissue Jelly or Albumen Jel
Hydrocyanic Acid
Rosalphin Balsa wood
Kapok Silk Bitter Aloes
Cotton wool, Lanolin
Cotton & Jute

Analysis Cotton
& Glycerin

Ring cell Valve globule Hg –
with hole in Pumice –
[illegible] asphalt
in [illegible] road pressure
Cell –

for 200 Ni dose daily
wants 12 lbs Ni injected
daily in form of
$Ni(OH)_2$ – Colloid –

4th Run on glucose
[illegible] $Ni(OH)_2$
short tube 1220.
[illegible]

Ask Powder of any
of the Varnished
[illegible]
[illegible] Cox

Run down & find out where
the regular one of all the
diamond dust gauges
should be sent for 3 yrs

Make ½ doz 100 – 8 Deby $CuSO_4$
6 NaOH Mixed by hand
test 1 CuO with 1/4 inch
strip of Zinc on each side
and 2½ long so surface
is about ½ that of the CuO
& discharge at 400 Milliamps
want to see if its the Zinc
that causes drop in Voltage

Another drop but
½" Zinc 2" long on 1
side only 400 Ma

drop of this with
Holashin CuO disc

Procure ano-ay the sediment in Bottom of Cell now running thro CuO Cathode holder –

See in last 13 sheets where gas holes shown if they reach on all to find if its Cathode or really all gas –

Try CuO discs 6 7 + 8 33% if any improvement out 6, 7, 8 of 20% – Try in Mortar + also make discs –
ditto 6 7 + 8 45% NaOH.

Also precipitated $Cu(OH)_2$ washed free + used alone also mixed with NaOH 45% while a mud,

also try Cool Copper in place of sulphate various proportions

Doughlerty & Phillips.
K Sulphate if added on by NaCl will form KCl + Na Sulphate –
This reaction may be useful
Try lepidolite also Spodumene with NaCl – also Orthoclase felspar by roasting decomposition to remove K

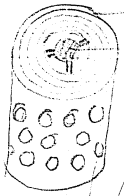
For Electrolyte Release try some fluoride Na – fluoride Zinc Sul Nitrate
also phos Na –

Try Cumerone + Pontinac also Creosote, cheapest in Bengal + also Coloured Nap with benzol of Cumerone tell not brittle when shrunk

Paper Carbon wanted with Vulcanizing stuff on Tape + Vulcanized to waterproof

(35)

Dry Cell



Perforated sheet Zinc
+ blotting paper (backing)
wound around with Cord
in center, the bladder filled
with MgOH, + wrapped
+ cut perpendicular except the
hole + put on paper Carbon
holder — perhaps MgOH is
between Mes + Carbon
wet with MgOH,

arrange to put Violin
fingering on a Viola body
to get more Volume

Press the Fe_2O_3 from
Carbonate precipitate into
Cakes also sheets by
passing thru a roll
Reduce by H + see if loading
cat not increased

Manbert Analyze to Extend
Notes 2 yrs more

Try MgOH on Polymers + test for
KOH after a week hot

E to precip MgOH to get S
Jelly like product S.H.
Also Analyze to get salt out

Device for measuring
Volume of Sound

Instead of using [illegible] proper in Dry Cu O cell, use the tough [illegible] from sulphate pulp —

Put Ammonium Citrate well [illegible] most from wheat [illegible] which has [illegible] by the [illegible] Dry —

Polish some [illegible] steel like Lube [illegible], Dip 1 in 8/4 [illegible] [illegible] strength or 1 [illegible] — 2 [illegible] [illegible] hang [illegible] [illegible] see about [illegible] [illegible] them

Dry Cu O cell ~~[illegible]~~

Oct 31 1919

The Standard Solution for Nickel plating does now in crocks supplying 78 Ni Rubber baths is

1422 lbs of Nickel Sulphate
285 gallons water
135 lbs of Acetate of Nickel

There is to be removed from the Solution each day 25 gals. This is to be heated in Crocks to 160° Fahr and Nickel hydroxide added in small portions at a time with continuous stirring until Litmus shows its neutral or nearly. This is filtered & put back into the general bath. Should gen'l bath get still too acid more than 25 gals can be neutralized daily —

see if Benzenesulphonate Cu also Ni
Sol'n works — Benzenesulphonate
cheap might be good plating
Sol'n Na S. Na salt probably
Sol'n Cais m phenolsulphonate
Other powerful acids —

Start work on Universal (Except?) respondence
To be made of mg 2.

Prof Miller says Even good NiOH
deposits up. Poor at throwing
of Chloride Baths, look out for oil
in handling leading, test
plating with Copper Sulfate,
test Chloride Baths, Defining Benzene
used in working Ni
Determine Ni OH test into single
do you use Sulfate or Pot in
test Baths

Make some anodes
4" instead 2" from Desc
Black + Rust them
in same solution
now running after
neutralizing of cyanide —
Weigh H and of better

Take temperature of the
6 cells just before
disconnecting. Also
Room temp —
Treat OH do same in
two 6 X 6 —
4 specific gravities of
the 6 cells at room
temps —
Also Voltage across
Each cell when
plating —

Half Whole Lo drawing
of Friend reflection funnel

Test loading new blank mix.
Put Simpson on at Temporarily

Get complete Diamond
Statement & also report
for all bort dust since
got started find out from
Catt date, & what was
gross over from block of
refuse on which fell on
then get diamond bort
was bought since that date

See Mr Miller & talk
about discrepancy in
Leyland & Miller on
statement.

Tell Dykentah Keep me
supplied on Carbs from
England —

Talk Kuing & the Hoover
relative bort & other diamond
at Kimberley Mines

Dykeman find out who
Operates the Guinea Diamond
Mines in SA. Kuing may
know. Geological Journal
Reports may have them.

Meadowcroft write Kuing
about these 2 questions
also of engineering work
is being done on the
Kimberley mines in Ozarks
Mt, or near there where
several diamonds were
found —

Put a Chilled flat
with 8/4 on grit diamond
dust over it particles
separated flows in solution
& plate Wi till its .003 or
.005 thick face of Ok for a
lap — weight just .001 dust.

Medoncraft
Let me see Dunne
answer to Crampt
questions J. W. Hering
be forwarded ~~[illegible]~~

Try 10 amp on one of the
Gram sheets, connecting
at one corner 3/4 washers
dipping in 20% NaOH,
see heat at contact
use thermometer if possible

Rykeman — How many
Cylinders came in set
How many shaving shipped
Rise of cylinder

a 005 Mi Disc
Weighs 61 grams

Tungsten Lap — 800 chg Tabor

Large Diamond with hole cupped
shape to hold diamond dust
to rotate high speed point rotate slow

Lap-Carborundum in grooves high
speed to heat diamond red hot

Burn piece diamond to round edges

Small Warner Cup 1" inside
rotating 15 to 20000 Rev min
grooves in of right shape —
Does not so good as 5" Cup
Force Rev when 15000 — 200 ft sec
with grooves in —
If 1" & 5000, & 5" & 5000 Tabor
Does 25 times the Cutting power
Sgr of Speed Carbide Wrn board
Holes Thru 1/4" Steel —
15000 — 165 times Cutting
Speed

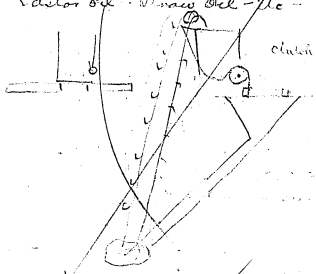
By the 3/4 X 2½ Linear work
OK — Try 1/4" X 2½

Also to test NaOH, Try smaller
Lathe that I can work with,
175 grams per day, 200 grms
225 250 300 —
When have found limit
Search for Chemicals that will
increase Solubility by forming
obtuse double Salts,

Note that 1st test sealed line
which drops to bottom —
dehot dissolve, (gain 1 gram) 450 cc
cc NaOH when used

VIII — Have bought 2nd
Lat. Toby H. procured
Hydraulic & procedure to
get heavier loading out.

Dehydrate Castor by ~~Cath~~
Castor oil · Olive oil — Etc —



May have to be filled once
pass forward to a presser
& refilled again to get enough in

find numbers plants average
daily & the average number
of irons —

Lay Calibrate ~~Hat~~ a-plate
drawn ~~draft on it~~

Chuck to grind diamond
find out length Columbia
Will grind 15 ft back
from end 7.5 will lay other

Press into plates & make
Zinc powder

Try Clean Cu transformation
by Zinc mixed with 160 or
150 mesh & press in wheat
in Hydraulic press

Possibly with 15/000
Rev 5" wheel
Carborundum Cut diamond

Try cupric hydrox alone
No. NaOH, for CuO plate binder

Fred off - Gus has means
he is to take 8 sheets
off - filter the liquid
weight it then heat & add
NaOH till neutral filter
dont lose any then weigh -
~~Dont use more water~~ Use
only NaOH,

Fred off, Make Zn discs
3000 2000 1000 + 500
Ditto Iron — ditto Copper
ditto Tin ditto Ni —

Make 1/16 thick iron same as
pounded 3000 lbs test it for
breaking — find an old
Iron pocket Mould Either
Walter Archer or VIII has
one — want to make some
iron slips size of pockets
for test at Navassa process
Ditto Zinc - Could use CuO disc
mould - In about 1/8 thick

~~What amount of bort on hand used only for making carbon —~~

~~Also when they say 6.5 pounds per Carat do they count the bad bort broken up for sand?~~
~~They gave out 24000 Carats in one year did this include bort for sand & also the sand?~~

~~Make a box same size as our ½" mesh screen put screen at bottom so can be moved a little reciprocate at when box is full — see if find ok — See if Dennudair got ½ mesh screen round top of metal —~~

~~Coughlin, Wand, Wiss, Nessing, Worth, Fg, Mud Contract, Hy~~

~~Constructed a Reg A4 pro reservoir use 2 sheets wafer Each .004 between & place Fe + Ni plates together — Also a cell like Ford electrolyte to Equal 150 amp Capacity .001 Ni Electrolytic sheet —~~

~~We should try for reviews on Ford but try Fe + Ni Steel Slowind — Dalaphand. Metal — Electrolytic Ni — Ele our operation~~

~~see our Pittsburgh Lelande glass for people perex type of glass bottles for drugs instead of Coudensity. They Cast was grind —~~

Perhaps, KCl-Hg — HnCl-6 + KOH solution saturated at 72 fahr that going to zero well salt & cut some KCl + NaCl —

Perhaps adding more KOH to sol'n before filtering get a clearer sol'n clear & they'll cloud in well & KOH

Make saturation sol'n at 100°C Cool very slowly to get big well defined KH Cryst & pour off mother

Dilute remainder to Zero & get fine cryst -

Use little 2 ½ mould with rocked sides round long wide, cut out from it & then dry room with Crazee Rock work & sulphur use Para Vulcanise + moulds under heat do vulcanize in moulds, if allowable

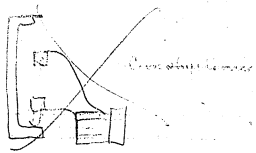
Ni - use 8/4 to clean & buy silk thread from Co replace Cellulose for Amberlite

Fred Ott Mould 3 more Zincs at 1000 2000 + 3000 in the round mould used for CuO,

Then use a Cu disc put over it one piece Rolling paper dealed in 20% NaOH over this put the Zinc, Cut blotting paper ¼" larger diameter lay flat in chest glass cover it square watch glass to stop Evaporation Run #30 Copper wire out put 200 Ma Pb in a sea horse long they last, soak the CuO, pick off NaOH also Zn should be underneath -

Have the so bad Roll mix separated way 4 to use the green for lines leads of OK. Also so Right separate Enough green to make 2 A 4 leads for long leads

Also take some small tubes with recovered flake + tubes with 50 old 50 new flake with recovered M. O. H.



Lap the [illegible] up fences.

steel diamond to initial diamond the Carborundum

possibly we cannot get right radius in the machine if not we can do it this -

A very high No 1 soft cast iron lap. pig iron best should be best as there is more free graphite Crystalizes out which gives more checks to roll the diamonds in — Perhaps Malleable iron which is very porous would be better still but may be too soft to hold diamond

Perhaps hardened steel best + use diamond in Castor oil or other high viscosity substance, Canada Balsam, glycerine Etc — & feed by Camelhair brush but its doubtful steel should have a matte surface

perhaps Fe oxyH mixed with diamond spanded on a small taper die plunger Can be forced thru a ring + deposited on the inner part of ring + then thru backed up + rolled to form the inner lap needed be more than .005" thick

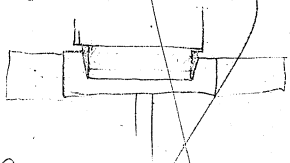
perhaps inner ring can be filled with richest holes by the pressure used in making my picture on Disc Records + forged diamonds forced into the holes, Nickel being used.

Possibly diamond can be just forced into half in Chuck thus headed + then suddenly forced down a taper. Causing steel to flow Entirely around diamond

Possibly diamond can be cemented to end of a conductor, grafted +

The Chuck formed by plating, (used Ag & Ok)

Also Chuck Moulded with diamond in Center + then coghate heat up in Hydrogen to harden + rivetted



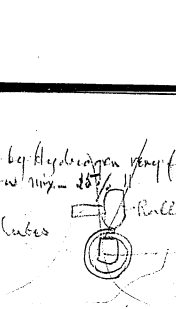
Campaign to prevent iron from dissolving in NaOH Try KOH also + also some agent in NaOH to stop it dissolving -

O'Dair what water do you use for dissolving Electrolyte in factory —

Send up + put up some old iron Never heated above 1550 + test

Mix some Bi by Hydrogen very fine + set in iron mix – 25%

Spot weld tubes



Leave 3 Copper strips in 3/4 of Reg strength Nitric Acid for 1/2 hour for 1 to 24 hours the other in weak also some weighed & in 2 weeks.
No varnish
See if it is affected by Molten sulphur – q

Get from Stokes or Colmbin Rubber Co some hard rubber dropes before its moulded to see if can mould diamond in Ni or Cu Moulds or Vicksmyn in Situ without hunting Mould

Neutralize 6x8 Gath + plate Recording Voltage after 1 min + at End

~~See the Mix from 10 old Cells~~

Can possibly lap the iron drum below the diamond by using a Viscous substance Stylol etc Chgs with Carborundum in usual lap or by a soft giving lap Rubber etc it will not affect diamond yet Cut the iron down possibly an iron lap 50% H2SO4 + clay

Possibly Mix of Iron by H. + diamond prepared on a lap + welded in H,

Fred Ott - now [illegible] Exports on
Rolchuning Mallo vide ref 6x8
Nitrates

Rec about Vole cleaner
in December [illegible] Wolfgd Lube
[illegible] Clarke

1 Carat Diamond Weighs
205 grains (King) he means
Milligrams, 3168 grains (King)
Troy [illegible] 1 1/3 Carat
402 [illegible]

205 Milg to Carrat

Yes OK
Tried

[illegible] Union
with Nickel.

Measure
Weld on Magdeburgen

Nov 7 -
Inventory SB
Nov 7 2.101,063

get 1 diamonds that weighs exactly 200 Mlg this is a Carat Mount it in piece metal for pocket use.

Mohr [illegible] dangerously weeking Jales Memmy keeps in Memorial Mc Gran

Holden — Let me know what Patents Brunswick infringes —

Ask McCheaney how many plates does he polish per hour on a press does he place more than 1 plate at once —

See if we got the rented battery back from Navy yard & say to Kelly it was rented battery + never need of to sell it cos now.

Boiler Maker hand up & rivet sections to extend Reg Channel to greatest length of Columbia Studio allow 12' ft for performers + if necessary Extend outside Mint building to be lean to, use 1/8 sheet iron + flanges but on + smooth no nuts projecting inside —

Make Silicate Polish with Syccan KOH so dissolve to thick Molasses like liquid + use in dry cell.

Try that MnO_2 ground with graphite like old Mix for a dry Leclanche Cell.

Test the Rockfor Valve with needle hole in it also distention of a closed diaphram to open a vent momentarily

Gall - assuming you print 60000 daily - you will require not less than 130 Mr baths & 800 Copper baths working baths with no idle ones based on 500 prints to a month -

Dykeman. Think we should Cable Wagner that we only want Crushing & Sort the same as the large lot obtained during the war.

Test for precipitating Ferrous out of 20% test tubes cork in + 100 Milly of the solution -

Order the Regeneration and Cellulex Apparatus.

Daughtery. About 12 Hand apparatus -

Manchester, Drawing Dept 6 cakes
" Table on Rotating guarantee

Lelande - Try a cake putting direct on hot plate

Ask how least good lot made handing old in for hour

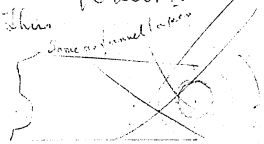
Try Lelande, again 1/2" square with a Cud that is known to be good its compression making reversal 3 ft diameter it can be turned round to have 2" surface, Amalgamate as before

Also try same Experiment Reversed using disc 1" dia + same 2" surface -

Recording - When I double length by turning it is likely that last action at small end should be discounted
Special large size Recorder hole used
(65)

Walter Malley

Thus



This will take out 1/4 of whole deveolaiyoo, & increase volume of sound.

Hanley instead of dropping at 150 Am Run Curve. 150 125 112 100 90 80 amp. He will tell us what new plates will do - cheaper to add plates than a new cell.

Frosell -
2 pokeds/dis c in hydraulic press pressed with force 2 tons then 200 more washed.

Nov 14/19 For 9.40 hand

1st Rough estimate. of cell's 40 plate cell.

Materials

Ni x fe Mix 60 cLb	$4.16
Ni metal Briquets	86
Can + stock	40
Bolts + End plates	40
Paper	20
Soda	24
Box + Rubber	50
Extra Top Connectors	40
	$7.16

No labor or other expense co in this

Lazor per starter	$1.50
General	1.00

Batquarantee Cost 1250 - 1st cost
Subsequent cost 1100
Return Value 100
List 18 - average dis 25 on list.

Pathe Sapphire tracks .030
New Brunswick Record needle
use .020 - McCoy

Man stationed Europe & one in US winding around taking Church Semper Lipsalo

Present Capacity S Bat Co 1400
Cells daily — 1350 lbs Ni from
Mud made daily — Nov 15/19

At work - Ni found quite 10 oz on cathode 10 hours - 50 seconds gives 1/2 amp for 2 hours or 1.5 Covered, then 1 amp for 1 hour then remove without washing Copper bath.

Ask on the 6 Ni December Expert of the with 10 Cells on or changes Solution.

Hard Rubber seconds, Ambroid — Gold plate Moulds Sp. Sulphur not hard

Try Celluloid record Varnished Condensate Var-Gold To Condenser also with Baker do & in Mould — print & see how comes out

Load up Pontiacs with chey tray dilute mixed with sulphur - dilute sulphuric tube dip in Sol. in Kero, Bakelite,

Legal Dept, How about application for gas alone in Mexico application

Tell Smith rig up using some Cu plate as Tredall made plain zn discs to get quick tests on his colloids

Find that Tube Coiller in Recover cell & only one we have where Semper sing together but not same key — & Cooperated so to speak —

Aug 25 1914

Try Zinc – Plating wire for use with 20% Zinc Sulphate Plant produced from Nickel and Copper Metal dissolved in Sulphuric acid

Edison do same thing with Pentmak fiber or Celluloid –

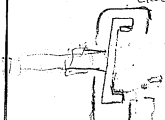
Start Doughing on Spodumene, Lepidolite get break of previous Experiments –

Doughing COK not kept false bottom with holes & Crenolas over & thrown in No 7½ Wood Leach keep running 3 or 4 tanks tandem & removed from 1½ to Cheaper Upgrade per foot block of leach. Could use square tanks 10 X 20 - false bottom 6" thick.

Lap. metal of rotator use roll in the sand cut with diamond

Ask Goff if can't release end of Gabr block when Celluloid finally abandoned

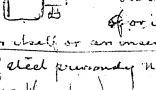
Catch Diamond dust



Shrink holder on the cast iron or if notched use holder shaft or an insert forced in

Thus of steel previously notched clear across – then bend up Or

Thus

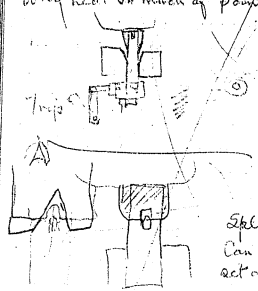


rung forced in & Nickel tool to free Stock Cut out.

Can make laps of 5/100 sand also Corner & also V laps 001 as this tool can't be made square

Get piece of Soft Foundry Iron face & then Lapt to shape of graphite — Can get piece pig at any foundry No 1 Coarse grain – Smith probably

Why heat so much of point holder



Split holder
Can then accept
set diamond

see of pouring Cone Fabry into
General radio press Cylinder
formed of Masory

Have Ford Stanley steaming
Tank steamed Mfg —
see about Anodes Silver
Cast —

Record in Book & that the 95
runs in 6 Lunchbox McKenghan
Ever been added but original
Sol + water only added from
time to time

Fix up record in NCC book
of following + need to keep
Bdo cc gallon sol NB

Write McCheaney to get
up 6 Cells — 2 have to be
discharg at 5 amp 2
at 7 + 2 at 10 amp
for decelerated tests,
so when I come along
can have comparison
Curves ready.

Ford Stanley Rosebery Jones plugged
fine McOtt prowd up + dried
then floated on paper Lamp Rec

A wound from the till

Try Pontiniac with clay up to donut in Rolls, hot — Try Rosin with it, Naphthalene, Solvent Naph, also Sulphur & clay from S. ground fine 5 10 20 25%. Sulphur Vulcanizer —

Try Cotton NaOH 15% soak & boil squeeze out free NaOH & bleach with CS_2 Make several strength of it in Water & precipitate with an acid then put in 20% NaOH —

Walter Miller — Make me Samples of Oboe, French Horn, Different Saxaphones Viola, Harp, Trombone & all other instruments of the orchestra But only their scales, going from their lowest to their highest note Want it on Disc So I can print on Condensoglo 2 or 3 discs maybe used

putting all spot cash conveniently on front disc & then 6 or 7 instruments get the solo instrument on one side Don't get them too weak

Have Werner Rig up to Record the sounds of Mrs Faalz & Ingrung H. Lopes until I am satisfied put it on Music sheet so I can follow the sheet

Listen to what happens here of Triplets & new Records & Experts.

Violin strings ground Round & smooth by Lapping also buff element — Buff bow element

Quality is then decided upon Receiving Equipment Level of which Level of Patents & Equipment

Why not polish on Big grooved Condensor Record. the Varnish of which has Diamond dust fended in, while heated + soft. + (10) Varnished, baked, heated, after this very thin Coat Var with diamond dust again heated (10) baked then pointed, point after shaping run across with a return mechanism — Deep grooves. — Also plain surface Condensers processed. the dust being least thin Coat.

Follow up Hardy + get every Pat or Applicn that Thomson took Wooy infringes — Crown Stating Diamond setting — Everything —

Make Manganous hydrox like we do Ni 1/2 wash dried bake heat then moisten + grind well graphite flake, get some flake Mag. Zn & Al Ammonia — Dry bat

Try Zn sheet + Nickel, blotting paper 15% Mnso4 Cu powdered & coated + assembled like Tom Starter for Dry cell —

Try after baking CuO plate Copper then wrap it & then amalgamate the Cu surface with Mercury to connect superficial Cu + pure Voltage,

Hanley Must have lugs to support the elements in cell —

See about making the tests of 2 cells each 3 ohm Lalande for high rate discharge +

Dont forget Cast Zincs 1/2 dia 4" inch Long with Cu wire in for tests of Mr Olsen additions for dissolving Zinc

[77]

Delivery to balance of Wages Records — also to the + marked Comel records in 100 Cat vulcanized

Record here that Boston manu time, " When I'm gone you'll soon forget me "

Write Butler + ask what salary a Rear Admiral gets for instance Admiral Byrd, Industrial Manager of Brooklyn Navy yard & What salary will he receive when he is placed on retired list also if an industrial Manager gets Extra as the an Admiral —

Fix up a Room for Lorey with Piano Room out porch in the 2 Cubby holes in Music Room — Loafing —

Medeff think Dyer for his article in Lading Tribune —

May 19/19

The last time I passed there in 1914 54 by James Archibald 4 knots + 6595 + 6904 by Shillaber & Clark that are worst of 3 carry account of both engines & instrumental

file Alpha Zinc dust in paint Vasolen Elc

Medeff with the idea for Mechanical engineer.

wound around the 6 Cyl Vertical Cylinder inclosed in 10 Et with 5% Sal Zinc 4 weeks, make 2/01 time lost

Have drawing made for Cast iron ornamental Ring + Collar for the new black and test them in any event ring should work This is to mount smaller sizes get edges + test with big pieces —

Scheme, Use 1 Velvet straight one playing 3rd + one 6 claws higher probably 3rd or other or other [illegible] to give color

[illegible] 4 Tiaras in for [illegible]

In putting in hole in holder diamond part which is to be ground should be set in the center by a point [illegible] after healing it is displaced. The the holder

must be ground true after Experiment Diamond working [illegible] If scientific the whole diamond will be ground away

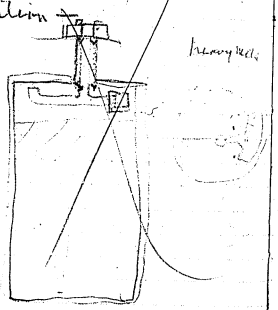
Van Moppes. 532 Carat Crushing bort. 70 B [illegible] 30 000 Carats

get some [illegible] Sulfur
Suppose the Sheet Rubber Mix to [illegible]
also in [illegible] Blo
worth + northern Sulfur
[illegible]

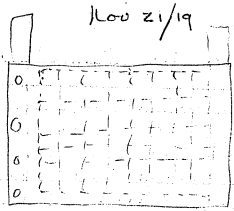
Up to Nov 21 — Duke + I
bought 4355 Carats
+ Cable 5000
Total 9355
@ 30 000
39355

Rubber or Pontinac or Cheap Balata or Denced Rubber Room - Stain Amberol with no without a Solvent Then dip in Celluloid (Camphor in it) Dope, Then give 250 to 1 lb of Dope & Coat Camphor on in small item ... it works ok

Run No Cu tube Metal Cells with CuO in Solution



Nov 21/19



2 perforated Ni plated sheet perforated or holes plated in floated active material & covered by screening screen with 0.01 wire (Ni) with perforated paper between P & N for Ford Starter

Free Sulphur is extracted from Hard Rubber by Acetone, gas brown fresh pin Separators & Extract with Acetone

get 10 lbs Dry Pontianac 25c

Dip piece of the Clay Rubber Sheet in Celluloid dope same as Disc dope dry & press new Ni Record piece see if it sulphurizes it OK

Also Mix clay Pontianac with Asphalt & try get stiffer for dipping dope & see if,

Also try Clay & oxidized rubber Linoleum.

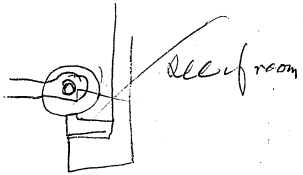
Ambroral, Wax containing a Glycerate of Pb Cu Ag so much that it can be got to metal by reducing heat to get rid of Graphite for plating, then Reduce & then plate

possibly can make a very finely divided Selenide Copper, dry & Coat wax ground same way as graphite, then plate.

possibly a Telluride say of Ag or Cu, Pb & Coat

Celluloid Cylinder paint thick Coat of Graphite or fine metals in Celluloid over surface, dry, print & plate,

OK



Andrard

× plate No 0015
4 band

Use a mandrel to bend into & loosen all round so can pull out

Then transfer to a plating mandrel & back up — Can make many from Original Cu Matrix with 8/4 —

Try precipitated Tellurium in silver graffito

Mallory ~~Yellow~~ ~~Chrom~~ photos ~~for work in prospectus~~

Hanley small ~~collection~~ Asbestos —

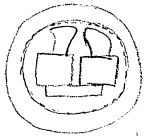
ditto Use 15/- McOtton time ~~tool~~ & di

See if Andrades been ordered for Ford Calliper wheels in Junk Ale —

Hanley brass (copper 20% warm water & rad at till organic matter out, ditto cloth

Koppers Varnish, Carbrone Remover on Koppers 1 3/4 lbs one quart Solvent.

Andrard



Magnetic slide pins

for Mr 1/4 8/4 d Copper matrix — to pull out

Try Gelatin for blank coated Dope for structural.

Sent for Cheap grade Balata

Tried trying mixing Posthumac in Little Mixer with & without Sol Nap also added extra Rosin –

Also use Cotton Flock see how it works in Mixer & Nelly

Ask O'Dair average room temp in test dept.

Edison Make rough sample on absorption of Water by drying CuO 150 mesh.

also Make a batch with 6 cc Nat Hydrate 6 cc " CuO Accumulyzer & dried

See if discs of CuO are not spoiling or cracked by removing from Mould

Tell See if night watchman will have a man on nights – up to Tell Hanley –

7. Oct. Try mixing Lamp Black with Clay & Portlandite,

also mix with Mercury to prevent Positive Record Event lap rolled.

Wisdom Portland very thick in Solvent Naphtha benzol, & pour sheets Chemical dept.

Also treat sediment get some Resin out – & Water out –

Cabinet mks

Pullman	200 day	$255	250	300	
Wes C Co	220.	95	155	195	255
Simon M Albany	120 day			195	
Jackson Health	150 day			155	255
Carol Formaldehyde	Jackson	140		# 195	
Marion Cabinet Co	"	120		# 195	
Monier	"	50			
Simons Mfg		45		255 per al	
Emery		125		155	

Nov 23/14

Preliminary tests 2 Cu plates 5 no am
Cells at following density of current
9 hour run

5 amp Dusch	.600	.600
7 "	552	565
10 "	507	517

20 cells each

The flexible tow coat sheet Pontiac with Clay has 65% Clay
key browning in Cocoanuts, Campor
mixed not ok [illegible] now returning

Have 2¼ dia Record Cu
plated with Gold 20 carat
present Sulphur effecting
surface with Rubber S.

Magnesium dissolves Alkali
filler Clay, precipitate by acetic acid
cook

This makes a mash put on cloth & squeeze out water, poly wash again, dry, press in shape bind ~~[illegible]~~ Cellulose Varn & print record —

Electrode moving up & down connected to a diaphragm faced Vellofoss because of polarization
Think Zinc Anode & Cathode Cathode being separated by dia in strong sol of sulfate/zinc or KCl, might probably work as .001 movement would enormously reduce Res when distance apart was .0015 or .002 should ground all but ends by varnish then distance would keep the same

Have filed pat on Gas alone in Microfoss Cups —

Gave Hardy Zinc Vessels renewed patent, the appeal — 26 Nov 1919

O'Day — plate some tube stock twice as thick as Std —
See if Radiation of tube in little cell is worth plated —

Speak to Walter Miller about Diaphragm of Shellac & paper pressed in hydraulic like Marine deposit — use for recording — probably no strains or anything to do anything —

Be sure get record of tests when O'Hair gets double Mr Knowles of Ni on Reg Tubes—

Perhaps loss of Capacity on standing is due to galvanic action of free iron on tube & other parts of grid — possibly Cut end of tubes at clamp

And at iron end it may be the Ni acts as P to the charged iron

Possibly Cu from solder separated & Lake gets it on Sol & acts as P for the iron & oxidizes —

Does whole sub-pack should be treated with small cells

Ask Maxwell to get me average Repeaters returns per month & the number of things for which returns for — Tabulated data for several months —

Follow up Lou & get the 3 Cans 5 gal Tank filled with Kopper Vacuole — Have boy bring it

Have boy bring Mr Mahr. Selenic acid & now to make 10 lbs = 4 put in sealed bottles 3 oz bottles for 2 lbs balance big bottles

Tell Ott boy Portland with Kuselghur Blue fix. ~~Ox Fix~~ Magnesium ~~Ox~~ Infrox we have some —

Make some Oxide lead
& other oxides which are
tough,

Grind out, Work clay &
Break Compounds of glass
in sheet,

Make a large 25 Sizes CuO
Sp. plate holder holding plates
then Indexing up & removing
plates. all metal so can
be used Sloppy water
steel working in free Exports
plates —

Dally — test a lot of our
new superals & see if they run
out (in Eccentric

press some of Ni mud
between or in flat Cloth
bag in hydraulic press — after acid

Watch Moore on Regeneration
& see if he gets good Nickel good
Color (in) pen green

Moore try explosives & ammonia
instead NaOH also try
KOH, LiOH,

Investigate Dalley & Lutemann
that out Alcoa of his Dry
Saves time & sand
pipe & small etc —

Tell Waller Miller
without he gets Recording
arm. clear Concentrate
he will have Idea in
turn with many cautions

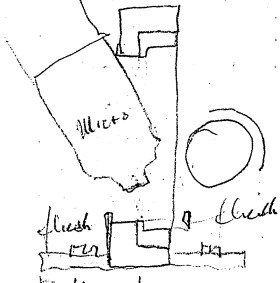
Patent Jony Starber in England France Germany, Sweden Canada

Say to Mr Ambert that it is absolutely essential I have McCher Desc Archual Drawing Dept Battery Costs Regularly

See Old Worst Contracts (last 2) & see if free after notice of Abrogation

What is being done with Moore Machine to remove plates & repair Machine

Take up Drawing discrepancy with Marchand & the Man in Charge



Quilting diamonds in Leap ichad

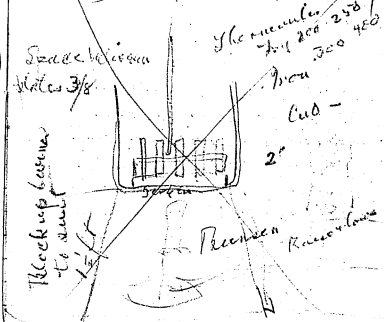
Acc Experimentation seems of
Conical dia formers will permit
Changing Wells to Oscillating
tyet 1/2 interchangeable

Go down to McCleary
see them process plates,
get Time of Each operation
in cycle —
Check up 1/2 size cans can
be exceeded, one next one
other goes in —

Q: Dan do you settle
your KOH, How do
you draw it off —

Acc of things on Inter
Islands Cycles —
also good —

Hzyl — Mathematics problems 25° deg



Dan — from yesterday all our
Test cells had 21% KOH &
2 grams of LiOH in Each cell

A4 had 90 grams, has this
been changed

Small cells Now should have 15% KOH
2 grams LiOH — 6%

A4 .75 of gram to a litre
+ Small Metal Cobb. 2 grams
to litre –

Test of Electrolyte received from O'Donnell
24th – forwarded 29 – by Daughtery
Sample was marked from Drums
Standing in Drums 24 hour

Specg from Temp	1.1697 %
~~Total~~ Ya as NaOH.	16.39 %
Na_2CO_3	0.37
Litho NaOH as NaOH.	16.11
act LiOH.	0.903
act NaOH	15.212
KOH	none
Fe_2O_3	0.006
Al_2O_3	0.00085
CuO	0.0013
Grams LiOH per Litre	10.56

Recd to
O'Donnell

After dropping Acid second followed in Melrose Collection dropping absorb the acetone in Carbolic acid from the Pump in Vacuum Bottle – Resin also may be used.
Water 1.315 %o Bragent,

find about a pellet or cage for testing etching in glass dropping
Ask O'Donnell – 10% hour one

Ace how much water
7 hour 120° bake test
dose absorbs as compared
to old Records
also Req SL flat by
weight %

Try in Reg. 8% $CuSO_4$ dehy
to see Mach, about 10% of Extra Anhy $NaSO_4$
& Iron bench out after
baking for Voltage
use 20 mins.

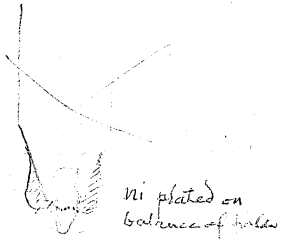
Make Reg wash ~~180 mesh~~
CuO ground to impalpable
fine in ball mill added to all

Try grinding ~~150 mesh~~
CuO & the 8% $CuSO_4$
in steel ball mill dry

Tell should clean
Instanodes ~~of Copper~~

Tues Dec 3rd 11

Watchman on our coal.



stopped off up terminals

or Made Slot & forced on
Even Thread Cutter forced on

put in Mechanical Engr
Americanus

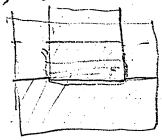
Gross power shut
open -

With Cu Out by Bas
immerse a strip of
freshly plated Copper
in to acid of my Sulphuric
in liquid —

~~Send some products Arrow~~

—— diamond point just
stick in hole a little graphitized
all over & slip off all except
spherical end -

Use Cloth also parchment
paper & Gamoc out the
Mercury from the Ni Fe
Mud, —



Go Mellin. Write that
Lawyer in Toronto
for the Ion out Mfg
Ni in Canada

Tell LD Miller Echos are in the Master, Respondent Records by new process Shows up

Released Replica Rise

		Remainder
Sept 17	2400	400
Oct	2000	600
Nov	2200	400
	6600	

Gordon Jewels	1806	546
Flat or Worn	4785	854
Error Slides	9	0
	6600	

4785
854
5639

X a slide somewhere on arm or below so on Blearing Replica removing it back it raises up another part of. play it back forward & slide down on record at proper place.

Make some Ferric hydroxide by Dialysis for Nickeling

Try 6 grms Ferric Acetate to test Nickel.

See if all Worth plated the photo Gold on Silver surface

Get Ingrid decide on Jungadin Record,

Find out what 26 1% HaCl used for —

Bring up to 175° Fahr
200 cc NaOH. 20% with 10
grms Reg iron mix — dilute 25%
dilute 15% dilute 12%
See how much iron dissolves
in def solutions —

Force Drummond fuse into
Celluloid warm for Lap

Remove Drummond wires as
patching Drummond gets in
holder & finally Walters
off into [illegible] — new
pieces with clip it

Set up 2 cells of
CuO dises that would
40 — & Run them
test strength after
discharge

Members of — Diamonds,

Dip polished steel Iron
Copper in Sh & put and down
for reading Experiment also
Washing steel tight
but not excessively polished
dip S/H & test — also in
basin with water glass

After getting thru with
Depositing Ni Experiments
run a Camp night at high
rate on Copper & clk say
4 grms of Sulfates Ele Ele
& find but impurities that
are bad

Put mass on Cleaner Edgehne second
Bring fine brass-find the material to hardness

V.M. instead of plain water
Let in pot allow reduction cooling 7/8
in pot use 2½% of NaOH, & dry with time

Photographer = Brent from Neg
having no reflected light by trays
angle 30° ½ exposure ½ exposure
other hand 30° deg = Cos wrong

Moors, Treat some of the
Longhlenny iron with glucose
+ NaOH to reduce it to
black iron oxide for test — [illegible]

Also treat Ferrochromes
with glucose + NaOH, possibly
[illegible] after [illegible]
Temp. 2nd [illegible]

Try Chromium Sulphide iron
and powder with NaOH, +
then 2nd with glucose + NaOH,

Also a precipitated Manganese
ppt by big excess NaOH, boil then
Reduce by glucose NaOH

Set up cell with pure Ni
Anode + Cathode 6X8 Cell
001 thick + plate out
iron Cl_2O_3 etc from
30% Sol NaOH also higher
perhaps saturated room
temp. also 10% Sol.
analyze the Cathode
deposits after all out —
in test Sol — all Warm 130°

Also set up one now —
iron plate 30 pkts in
30% at 130 against 001
Cathode of Nickel, also Reverse
+ [illegible] —
Use both sets for long tube
test cells

Run 2 long tube cells hot
with Cuhydrox in —

Tomorrow, Try CO_2 process
Set up 2 cell cutting reduction
in H —

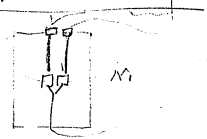
Send for some reg iron mix
moulten load in 2½ close, mould
+ press same pressure + remove
break up to 15 Ele mesh +
Expand till it works — clean
Moulten NaOH 5% to Ele
Mounts —

Make 14 Cu Cu Fe Ni
Bake 1200° for all
tests.

Mechanical — Leg that Cement
works at my house or some
place in Dunmore we have
the parts of Myers made at
Edison — Print up W.J. Patches

Dec 6 1919

Make 2 points diamond just
forced into Hole fairly light — then
so it can have angles on — or
use lapidary cement — Then 9 well
plate, Lapdum + polly mg —
force in just under crushing



proper Vac — Cu one then Ni
one — flash Cu + Ni on wall
think low Vac do it —
for flake. start one with
hot spark jump) for flake

O'Hair put up 2 long tubes
Cells but do not connect any
Current Then run the heat
at end Week Connect up —
Run Regular —

(115)

into Na_2SO_4 some perfect slabs 20 or 30 slips placed & taken out,
Try Cu to free Na_2SO_4 & see if they dont come ok quicker if not
Try precipitating for other metals etc & following which is connected
1st time look out for Aluminum, Mn should spot the trouble this way

---

Recommended $NaOH$ from old 10 cells
A6 mix 140 Amp hours

Echem #2	Runs	1	2
	1	967	953
3rd Run on 10 that runs	2	1197	[illegible]
	3	1223	1223
			1153
	14	1177	
	10	1163	1117

Try feeding nearly dehydrated $FeSO_4$ into Molten $NaOH$ see if 720 obtained or what

---

Get Na_2SO_4 Sol from Creek into CuO - peroxide hydrogen or Ba_2O_2 & see if Mr Graves design basic recipe & gives OK slip on (Made that time) If so all we need do is to use BaS for Cu & Ba_2O_2 & acetate Ni or acetic alone to keep out Iron & Cu —

Get some Rey (frozen & thawed) treated with NaOH a chemical like recommended NaOH & make 2 short tickers —

Get Schuberts Ave Maria 1 days in sequence to poor accompaniment. Avoid our Popular Music —

Figure on Relief
Shankal set on group of
Notes predominance a divinal
impression — The Shorter
Complete idea in Music

1 Cell Cu free sugar check
H_2O_2
1 Cell Hypochlorite soda
1 Cell Mercuric SO_4
1 Cell Peroxide Ni
1 Cell. Permanganic acid or a persulfate
Albito get rid of H.

Try 5 cc 8/4 strong
20 cc " " mecol —

Try Exquisite Medium sleep travelling
[illegible] — the [illegible]
diamond Elephant Rhinoceros —
also Porcelain people also
Cast glass men — Slate,
Steatite Soapstone —
Alabaster —

O'Dwar about Kel wiring
005 Block for iron packet

Also hang more open holes
or slits if too much
Comes out, put something
on change with Constant
Village + low rate Tile
filled Magellus

See if Trichromophenol
[illegible]
[illegible]
Little [illegible]
[illegible] Porcelain

Take a Cell trial exp
Commenced, heat at 8 pm 180
Resistance 1 H 300 ma 1 pole

Cell at by bleaching and
Chrom — [illegible]

put 10 Mg Ferrous Sulphate
in — [illegible] add
1 [illegible] [illegible] again

Edison No 3 NiOH [illegible]
with 10% NaOH + glycerine Mix
now from the 10 Cells A 6
[illegible] only gave 135 amp
hours

Hours	A	B	Gave on hot
1	763	873	
2	1193	1093	
3	1117	1140	
10 Hot			
15	1087	1053	
17	1157	1133	

Moore

Experiment on getting a reducing agent which will reduce Fe_2O_3 like Ferrous Compounds Fe_2O_3 from Carbonate but not [illegible] Metal or $Ni(OH)_2$

Try Grape or Milk sugar & other sugars

Also try a Charge in KOH, dilute KOH, Cuprous hydrox also in presence of Sodium Tartrate Na KOH & KOH,

Idea of Tartrate is to reduce Iron Salt in Alkali.

[illegible] Violin

Acute Cello giving longer [illegible] strings but strengthen Cello so it will stand the accent

Tension of longer [illegible]

stronger to obtain the req pitches of Violin =

Ford clutch wax

Bar epoxy, silvered – outside Nickeled buffed
Pan walls ~~[illegible]~~
4 Thermo, 4 Reg Check bath
plan [illegible]

Put up 6 cells to run steady
night & day at 200 ma on whole
piece of black or smooth part
of Collodi except 1/16 at edge
when 1/32 black strip
insert them for anodes
also Pad cells 5×8 [illegible]
Then test efficiency in
CP Ni [illegible]
& also with, Ni SO4 in
baths

Walter Miller

We should make all cones

Mendenhall said that big house
Music house has branch in N.Y.
Better [illegible]

Make 2 dips of chemical
CuSO4 in press
temp to 1300 –
press Cu [illegible] in press
& mints 1300 –

Ask Walsh -

1 = Allis lights turned off have singer gradually weaken voice to inaudibility in a period of 10 sec & then disappears entirely

2 = As a novelty singer sing in another key say 2nd below of pitch is high -

3rd Instrumentalist to play with Record so the 2 sounds will resemble double clapping as a novelty

4 = Following Record Houghton for instance -

5 = While never go above 60 Revolutions, show the public The effect of 75 70 & & 65 & then put Reps. back & start over at 60 50 40 -
Left Reps by pulling down on weight which increasing for each change of speed to get steady. Say that

when speed is higher than when recorded the effect is bad but to most people representing at at a slower speed is very pleasing.

6 = Record a Record Helen Clark & Phillips, a duet say Ernie Wise & Clark only so recorded then this record played Phillips can accompany Clark & then clap, a stunt

7 We have a record in which Clark Phillips & Homer is played as each [illegible] instrument but ~~of course~~ leader wants prompt, a stunt

Mention show Slides/Make.
6 Regular sing up plates
drop in Lake & bring up to
Bake & set 2 big Celeron
for key tones. we have OK
one Lamp — one 1 amp
the other 3 amp rate

C035

When get double Crystals H_2SO_4
at tests OK put up 1 with
½ cc H_2SO_4 1 cc 2 cc
4 cc 6 & 10 cc acid –
Cut Exactly 3/4 wide 1 3/4 long
from the slices off each to
weigh & make all the preparations

Ditto 2 4 6 & 10 & 12
Acetate Ni –

Meadowcroft Sec of Pittsburgh
Glass Co. Mr Schaeffer Co. please
in NY or Newark of Cheq
Hacos! 3/8 glass locally also
we can get them Cut there
We get 1st one from Meer
place in Newark –

Chemical Make Co. Co
Selected Wax seconds
Wax with make Coated
Filling [illegible] of Mother

We should see if we can put
a reducing agent in our wax
that is put in Au or Ag
will reduce – say Formate
Silver in shade or light –
or strong sunlight or arc

Should get a Neg person
female & run along with heavy
weight on repetition to
polish from the Crystals
surface given in Metal Cu
Try 3/4 it Neg may be
[illegible] or place turn on it
this may polish from fine
& by 3/4 we prepare Ni

Metal Kelly's new cold
mixing process –

To prevent Cracking of Pan
or new record shaped use
Mercury [illegible] to turn out
Church & light pressures in every
blank to get perfectly

Listen to some of the 100 Favorites

Walter Miller + Harper's dedicated
Evermake the Peerless of all
instruments on disc
Would like them to make
Metal Master - Meaning that
them ~~to~~ best only in way
on Reproducer -

G. Bailey's revolving loading
Model Metalphone Work -

Try one of the hydraulics
pedaled the big H as an
Invalid, in double Cupola Rubber

See Hicks about new selling
plan

Bamberg - Rubber Sponge
Tone modifier on Tone Plaster

Send over for list old
tube goods lines on &
Yr. price to advise on
removal of labor machine
& Yr. price -

Edison #4 - This lot segregated by
using 20% NaOH + boiling with glycerine
[illegible]

Run	1	830	783
	2	1060	1020
	3	1170	1123
	14	1040	1003
		1037	1010

Use the Ulica Mean harp +
Feet Violin on it -

In make for Merchant Mention
that Present Mills Property
Lease by [illegible] Hay
New Mills Corp [illegible]

When get Double Cryst
$MnSO_4$ + H_2SO_4 to zinc Cry H_2SO_4
to hydrate —

Consider saw or hose cut Cam
open + bent way —

Tool to force pockets out

Plan for breaking cents
or replating — bridging
Connections — + grids

Try Regenerated returned
Cu plates + treat so can
be used again this process

$CuSO_4$ + $Cu(OH)_2$
equal to CuO make
plates — to see higher
Yellow — equal tube
temp be possible

Also mixed Carb Mg + Cu to
ignite in porcelain + dissolve
out MgO — to get higher
porosity —

Get Cost of tube grids
Completely drill + without
Labor pulling in Lists
drill 7/2.

Carbic Makers get in
Sulphur to throw down 2/2
Try long tube closed a
have some Sulphur Crystals
in bottom see if black
sediment throws down

also another tube with
$Mn(OH)_2$ + Crystals Sulphur
+ see if black —

See Spoil & if ok place orders with Brooklyn [2 gross] for breaking

Number 1 – What [illegible] Instrument Kept, & accessories & [illegible] etc

Give details for Gentlemen to reduction to Ladies [illegible]

Q's Makes about and of BaS. for Dressing Bottle

Dalley – try Sunflower & Resin & Chalk. Make a Wash Powder Compounds also at [illegible] day & [illegible] & [illegible] also Yuyule [illegible] –

Mr [illegible], See how long you can use the 20% NaOH, amount & frequency of Mix by weight also when get bad Soap & [illegible] of Rich oil Glycerine acid [illegible]

In refilling up 6 cells Double Crystal No 304 with Varnish also used Marked Collodion nearly been area Strip & weight. Each time when dip % H_2SO_4 in

With Double Crystal CP No 304 use platinum electrode & Carbon & plate out X by 1 Volt

Ditto in Not reading (Calcy) but with Cu & Zn out all –

Dalley – As Cold Mix balls on heating 1st increase Resin, till it dont boil. Also try Koppy's resin method Resin –

Also put balled up [illegible] then hot mix with Brick Mill & add some Clay & use of corn grind –
Try checking at Three Hrs & 4 Hrs Kelly –

Go & see how mix to get out of tubes now, also Rockets –

See if rubber seperator ~~[illegible]~~ broken Can be welded

See the Nickel ore, then try a dry under magnet, then non mag. Heat slightly Test Magnetic & seperate then a grade to Oxy by Nitric & perceptible test Mi Cu 1/2

In Ford Machets use double Cup-Hooy —

Get that handling book for big Cu O square pieces & device a good Conical rack

Follow up Silvering the Diamond Splint & holder

Circular about man for JOHN Place, also distribution of or Monat

Listen to the 10¢ Records or such as we have.

Walter Miller — Get Gramophone Catalogues from England.

Man to go around USA to take video bright —

Why dont judges get all the singers that I see give recitals at Carnegie & Aeolian Hall Etc

Mr Everett Get Billings & Hunter Catalogue Find out they have office in NY — if not ask Wagner to get them —

Dally Let me see your Loader into Magnetic work

set up Spectroscope, get supply tubes & asbestos discs — for Dougherty

Lotts — red some of the latest
Redoxed from 5 h + permanate
with strong syrup + low strength
+ see if Cuboxide not Mn Oxide —
also try the mixture of Fe2O3
+ MnO2 — + permanate

Attempt a Crate for big
CuO plates to fit Kiln

How would a Half mm
Kiln Furnace answer
for baking —

Make up fresh
Cleaning Sol for
Test Cathodes

Rinse Wash

Grill to save Mud from
Nickel anodes

Find out if simple hand
mag 3/4 diam 3" long
of reliable breaks with
Control Key

see if can grind the
from above Schulam OK
with something equivalent

Mr C.W. Moore thinks our Cake
bodies are do 110 per
hour, this would be 20
hours over 50 bots —
10 Machines 500 bots —

Try reducing Fe_2O_3 ~~[illegible]~~ with Zinc dust (acidified)

~~[illegible]~~ Chlorophyll — ~~[illegible]~~ with Tetrachlorap ~~[illegible]~~ using ~~[illegible]~~

~~Put an old Anode in the 12 cc of H_2SO_4 Cell —~~

~~[illegible] 6 cc H_2SO_4 put, [illegible] neutral. Old Rusty Steel Anode in~~

~~Marchant asked removal of Cement Wales, nearly due,~~

~~Check Marchant [illegible] machine too much out [illegible] up over [illegible] adjusted [illegible] Motor.~~

~~Cole Wires [illegible] the new arm + Records from W. Miller [illegible]~~

~~Look B good Lead Cud discon in Washer [illegible] Nasty put dry. [illegible] Copper Wedgeter 2 [illegible] test, used [illegible] acid [illegible] wet before acid [illegible]~~

~~In long Cement Repairs put an outside [illegible] Chamber to Control C [illegible] so Longer [illegible] used in [illegible] Order — If [illegible] will be [illegible] but outside Chamber [illegible] wick [illegible] Wet [illegible]~~

On the 12 cc H_2SO_4 Cell Electrolyzing anode plates were platinum on anode + Zinc — in neg put in a new neutral sol fresh 2 qts & use Electrolyzer see if opt [illegible] Chemicals

Copper, the 2 liquid Cell degas — work H_2SO_4 + Zn both alike —
2 Nitric [illegible] soaker water before [illegible] performing

Solution out test Turn from blue Fuchsin color test + no Copper

Double up tale on 12 cc H_2SO_4 Cell — see if Electrolyzer

Remove Slate from Moores funnel green liq neg

With [illegible] plus discs

also place 200 discs with Brooklyn mixture

Neutralize new sol 12 cc H_2SO_4 test dead neutral using 2 Crystal then plate

Announced at Storage Gallery 2 Electrolyzer anodes use 2 Crystal

ditto bring up to rod. 2 Electrolyzer anodes in air pockets + use 2 Crystal Cell

Use 3 Electrolyzer 1 Cell 2 Crystals.

Use Reduced H_2SO_4 & [illegible]

It is strange Electrolyzing anodes neg ditto run low Hydrogen — neg — but pushing to Red in air OK Nitrate form a very stable Compound with Hydrogen

Give Hanley ~~[illegible]~~ Jenny 200.

[illegible] longer takes a
[illegible] the best for other
voices is a or c, but
a best.

CuSO4-precip with fine NaOH.
just a little extra NaOH,
Dry 220 or thereabouts, then
pendolate out then add
some liquid Calcy + NaOH,
Mix press + bake—

Ground up some [illegible]
or then 40 60 80 + separate

Separate some more fines
than 100 for test,
test finest—

Play Mascagni, Leoncavalli Bizet
Balfe, Saint Saens, Flotow,
Donizetti, [illegible] Strauss
Puccini, Puccini Cinquettier,
[illegible] (Humperdink)
Wallace, + all [illegible]

Soak a [illegible] CuO
dose so [illegible] of the well is
left [illegible]

[illegible]

Make [illegible] Make like dose
[illegible] using
CuSO4 [illegible] + NaOH.

Make scoral with holes in
3 full thick 6 1/2 Thick

C1-3

Mason to. Tumble some black + also grow to wear off the wear made on outside of particular coal for figs after screening

Also separate all with signs + test for wear —

Also complete test Checked by wear screen —

Warner go ahead with Real dimensions + make 20 holders + both plate for them wear screen

Cut from Milner 5.16
for Florida 3.16 bars
of Carolina

Call, badgerson test wood fibre — its books you will look out for

Dally Vermish 2 Coals
2 glass not screened +
Iraq Coals — 2.6

$\frac{452}{12}$

C155]

O working ✓

1 = Improved Lelande — O
2 Dry Lelande O —
3 Food Starter O —
4 Audion Battery
5 New Lens O —
6 Wax App —
7 Sheet Film & articles O
8 Nickel from Sulphur ores O
9 Lamp for Electric Recording O.
10 Moulded Cabinets, formaline
11 Flock & Velvet O
12 Increase Capacity Ag
13 Chalkphone Amplifier — Chalkphone.
14 Lithia from ore O
15 20 parts for Carpet & Auto Machinery O
16 Chalmache Shunt rupture Loading O
17 CP KOH free Chlorine — O
18 Recording Telephone [illegible] O
19 Charts for Surface Scale O
20 Repeater to play all Record except Edison
21 Enamel Cabinets.
22 Non Graphophone Gold Lined or Sub. Stylus O
23 Varnishing Mach Disc Record O
24 Removing Manganese from Fe SO4 — O
25 Cheapest Telephone Receiver Paraffin Paper Resin
26 — Best Impregnation for Chemicals & Chem

Dec 20 000 Cabinets
Dyeing of [illegible] 000 000

10 000 1 Mat Leon —

1200 —
206
8
700 | 2401 | 343
21 000 | 270
3 0 6 0 | 401
3 4 3 3 | 656
3 5 | 92
2

36
20
720

6
4

24
2
48
2

14
14
5-6 240)960(

14
19 6 240)960(4

2.2

5 to 6 bath 1 & [illegible]
2 hour
12 per day
24 daily

6 X 20"
5 Dollars

120
24

2
2

180 000

20

2 000 000

280 000

Notebook Series -- Pocket Notebooks
Notebook, PN-15-11-10

The one dated entry in this pocket notebook is from November 10. It was used by Edison in 1919 or 1920 for notes regarding experimental work, business matters, and other tasks to be performed. Most of the experimental entries pertain to storage batteries, including notes on battery regeneration and automobile starters. The business-related entries include notes on payroll, production efficiency, battery production problems, battery sales summaries, and labor layoffs for efficiency. Also included is the outline of a plan to reorganize the Edison Storage Battery Co. into fifteen departments. The pages are unnumbered. Approximately 30 pages have been used.

PN-(15)-11-10

E-1710

#2998

Get cycles of everything assembled.

Get time per doz or 100 of all operations

Time cycles on everything

Pay rolls of officials by name & office or occupation — of men in all Dept's.

All general men — Trucking pkg Etc —

We had trouble on 3/16 tubes of tubes not flat in grids see how it is now on 1/4 tube opt'd — Follow

Follow up fix up used cells + trace up for putting in Extra pins —

Dont forget room for Regenerating —
Also for Ford Starter —
Keep this in view
Have Hanley make Estimate floor space, 3000 autos daily

Have hang + Park time operations in assembling + Cutter in Lake de Lebanon on Cans —

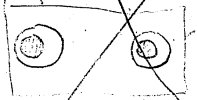
Follow up Smith on the grooving of pockets.

Nov 15th

The wet cell in + then the plate
The + is put in before system
Top is formed. Then the
stamped A4 or B 4 a few
plating by rivetted Operation
In Assembling
they are wrecked

Thin side rubber sheet
are used in all cells.
investigate if Plant
dispense with

I notice posts dont come
up Central through holes
in Top.



Needed all not
all that way

No reason small cells should not be welded by girls —

Note heavy felter cloth bags being made at Assembling room pressure for anodes — terrible resistance, Edgerton try Egant of thinner + the thickness of felter cloth to get drop —

Also if they fried anodes + cloths so they are not mechanically injured by pressure —

Tell Edgerton I have office here + to call to see me of Lake Erie —

If an operation needs nickeling + then relium after welding to assembly why not do operation needs to nickeling + annealing

Monahan — why not make a A4 with grid too small + lines too long + see what is result —

Get VM whole pay roll — work + all + set just what he can have + why is to go get number of Clermont

Note 3rd day

Monahan — Bake 8 plates from stock for 1 hour at 212 + assemble in 004 + test — Dup 2 Regular

About 2 yrs supply of Nails

7 men on 1 truck unloading including drawer & sang sheets awful -!

4 men loading single box sheet on truck
No handling appareils
in Block/Idly Crude barbarous

All kinds stock in storeroom barn in yards all rusted -

Men all over in gutters -
Inspecting Sho

Aunt Corrugated Lies
much worse

Cubby hole offices
Everywhere - all
unsanitary in most
cases -

S B Bally payroll of what
each foreman attends to —
offices same men & rate
wages —

Natrie a slightly
short Ay Cam
not Corrugated
with bad buckles

S B has a Metal scrap
Bales why not
phone wires

Nickel scrap cuddron
& Everywhere

Lead battery scrap
sell at
ton
at Mr Thorrow

Rubber wire scrap
Old Centrifugal Motor
Drum Hunk out used
plating room — old
buckets —

End this day 3
annealfurnace

Anneal long
pots Horrible
shape this dept
is a d—d scandle.

100 bbls of Mixed
scrap in room
where strips are
plated — awful
state of affairs

C11

bottom floor ~~where~~
across from Rolling
Mill. Flooded with
Cu Ni Sol man
Bags everything broke
down - no
overflow to sewers
only hole + no chemicals to
except by accepting
no fall +

Pipe Gallery next
Horrible is also
a stock room
acid + Alkali
Vapors all purely

Big Tanks -
what's in them

Another Copperator
station here
in addition to one
in Main bldg

Meanwhile
Are factory Vacuum
Cleaners made

Manbert wants inspector
at Cement works - put
new man to Go Freight
by Tonnage + in
10 days send B to
Cement works for
2 weeks + report
direct to Manbert.

Possible reason for split tubes

1 = Tampering with loading Mixture
2 = Bad fire, dry of flake + excess NaOH,
3. Tubes too long
4 Diameters too great for quick heat 15 tons
5 Weak steel
6 perforations not right
7 Rings to small or too Large
8 No slip at seams
9 No slip at Ends
10 Steel burned (or oxidized in annealing)
11 High Capacity NaOH,
12 Low dumps too much NaOH for flake –

Enamel Exists by Heat on Cast iron + steel –

2 cc Na Silicate Fair
2 cc Na Silicate 2 gms Litharge good
1 cc Na Silicate 2 gms lead glass, Litharge + NaOH Good
He used 50 gms Pb glass 200 mesh
25 gms Litharge 25 gms NaOH.
fused, then mixed with Na Silicate –

Arrange with Clark Saloonge to Corr Discard Mandels after 2 years by using Metal Tubes are OK

Lunderdale at Bat Co we use also disc Bart diamonds for dressing Emery Wheels instead Carborundum, use commercially

Enamel for Pots.

Feldspar	60
Borax	42
Tin Oxide	12
Soda Ash	15
Saltpeter	2

fuses
1400 to 1500 Fahr

[15]

Go with Lang to see the apparatus on tube block & ribbon plating

On board of Battery at Empty Spaces 1st floor show rack by model of wood & everything else

Also stand the other buildings —

See Auto Varnishing Machine —

Give Payne the penciling from tube gang & from Iron gang to utilize in new Batteries —

Meadocraft Advertising for a Mahanatian after we get of Cup Foundry

For testing leaky Cans got 8 tubes — only 1 can Cans be tested — in a tub Hasts want / Like Culling Bag hole in gate for bag Dog a little hole for puppy —

System of Checking inspectors for tubes who have list of everything to look for & who check Constantly & report changes wrong & o/o discarded — This Independent of Foreman or Managers —

Total loss should not be more than 5 o/o

Tubes should be smaller in Dia sizes

Not to Crowd grades &
give no chance for
Expansion – also tubes
should be 1/3 @ 1/16
shorter to allow expansion

~~Inspector should watch~~
~~strips splitting for spacing~~

In re arranging St Battery
Get rid of risk of fire of
Benzine wash of
Tube pocket clock –

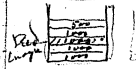
in money Value

Percent of Sales of
Years

A type	71.6	77.7
G	6.1	
B type	18.7	22.3 %
Others	3.6	

Find out where A4 Cons H A6-A10 H
block filled with Kott +
Lithia – Others Co –

Storage Cat instead of
boxes full as index use a
board with slips



Red slips
shows expression
index

This shows whole stock house on
board at a glance

Possibly best way is always to assemble same number of Cells, ½ day A12 ½ day A12H.

If order is for 600 X cells make 1000 - + stock the 400 till next order + so on, or if 1 day makes 1500 + order is only for 600 - then stock 900 - + we won't be bothered for some time, The amount made depending on keeping all the men busy on agreed units.

% on Value at Cost

Sales for Nine years.

A3	.33		M8	2.06	
A4	10.99		M20	.24	2.30
A4H	1.91				
A5	2.17				
A5H	.06				
6	22.82		L 20	.08	
6H	2.17		L 30	.78	
8	14.32	75.49	L.40	.17	1.03
8H	8.12		W 2	.27	
10	5.48				
10H	0.42				
12	6.07				
12H	.63				
B.1	.77				
" 2	1.35				
" 2H	.54				
" 4	4.30	12.41			
" 4H	2.20				
" 6	1.90				
" 6H	1.35				
G 4	2.60				
" 6	59				
" 7	19				
" 9	1.97	8.44			
" 11	2.65				
" 14	.74				
" 18	.30				

See Smith about Diamond
Mfg Towers -

Stat
Reorganize

Waldo Smith
Smith Clement
Lichman
Pauch
Mayer
Monahan
Egerton
Fredschaw

New Inspector now in Gallery

36 M8 Equals 1 A4 Equivalent

350 lbs flake need daily
for 1000 A4.

~~8 Cranes~~ ~~1 Shift~~

250 gals Wash Water
Cu + Zn per Crane hour

Use just enough Cranes for
1000 Cells - Let repair men
in shop ready all go
Rob the other Cranes

2 Stop all ~~tool~~ inferno
only keep enough for
Repair Crew

3 Cut out all tool but
Measures & those absolute
by ~~[illegible]~~ in Research

~~Rubber Falling Mill Co~~
~~Minnamouri~~ –

4 Cut off all deflum
bent 2.

5 Organize M/S Bod daily
work orders for perfect
working

6 Be short of trucks

Yes says 100 lbs green
hydrate Nickel from
old tubes requires
25 lbs Na Hyposulfite
+ 10 lbs Glucose
Equals 1 ½ cents lb
~~Hydrate Co~~ –
4 cents lb Nickel hydrate
6 cents lb Glucose

Organize Balling Co into
Departments

1 Tube Load, & make tubes
+ assemble in grid

2 Punch Presses

3 Screw Machine

4 Load iron + make pockets

5 Stock Rooms

6 Assemble –

7 Chemical + wash water
+ flake, separating +

8 Electrical – Crane, Testing
+ forming

9 Part Plating + strip
annealing

Rolling - 10

Carpenter + painting 11

Machine Shop-Repair 12

M8 - + small - L + anchor 13

Repair 14

Regeneration - 15 -

Repeters Disc on hand 2810

Amberola 7203

Disc-points 3877

Amberola points 3760

Complete Phonos Disc 45000

" Ambs 19000

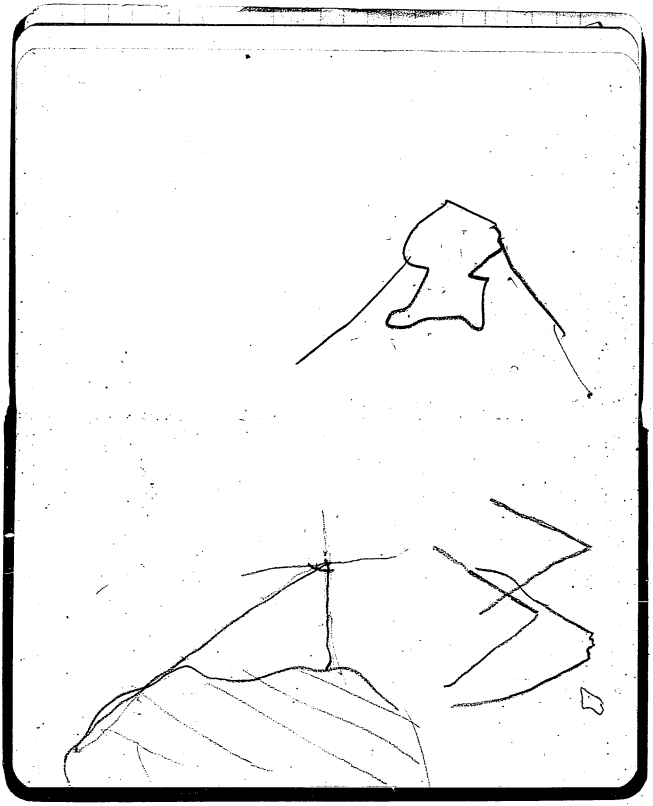
Big-Lat never used 40129 K

In addition diamonds in all stages taken to Vault after shut down

Plus all the Mud stuff -

Doughling took Cu Ni Mud
Muddy 3.10 Cu 8.36 gm Ni
Added H_2SO_4, boiled fancy
boiling 50000 gals -
Press Cake Cu 3.10 - 3.57 Ni
Liquor Cu None 4.49 Ni

250
19
225
250
2475
2870



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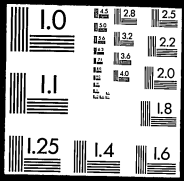

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